Conservative Dentistry, a Case in Practice.

By C. Edmund Kells, Jr., New Orleans, La.

On the morning of October 28, 1908, a lady patient, living at some distance from the city, while in the act of brushing her teeth and with the brush in her mouth, fainted and fell to the floor.

The right upper lateral was driven up into the process about three-fourths the length of its crown, and the two upper centrals were dislocated lingually to such an extent that the posterior teeth could not be brought into occlusion.

She did not reach the city until quite late in the evening, but, having been so requested by telephone, I awaited her arrival at the office.

Notwithstanding the severity of the accident, strange to say, there was practically no pain at this time other than a feeling of soreness.

The mouth was thoroughly sprayed, the region affected painted with aconite and iodin, and three skiagraphs were taken of the parts involved.

She was then taken to a hotel nearby; hot liquid nourishment and immediate retirement suggested, and a physician requested by telephone to call and to put her to sleep if necessary, as a good night's rest was considered imperative. She departed somewhat cheered by the thought that her teeth need not be given up as lost, and that every effort would be made to preserve them.

Early the next morning she returned quite improved in appearance due to a good night's rest, and the fact that she was experiencing no pain.

By this time the skiagraphs had been developed and disclosed the unfortunate fact that the root of the lateral had been fractured diagonally across. By a fortunate coincidence the line of fracture was directly in the path of the X-rays, so that the break showed unmistakably in the pictures. Furthermore, as each of the three films disclosed this same line of fracture, all element of doubt was removed from my mind and

FIG. 1.

FIG. 2.

subsequent events corroborated the picture. An impression of the case was taken merely as a matter of record, and the cast therefrom is shown in Fig. 1. From the nature of the case a perfect impression was not attempted. Fig. 2 shows the skiagraph in which the white line indicates the fracture.*

Treatment.

The method of procedure was as follows: The mouth was thoroughly sprayed with hydronaphthol. The crown of the lateral was removed and placed in the same solution. The remaining portion of the root was removed with-

*In Figs. 2 and 4, the illustrations at the left are from the skiagraphs. Those at the right are from wash-drawing copies of the same, to better bring out the points discussed.—Ed.

out injury, but not without considerable difficulty. The socket was thoroughly sprayed with hydronaphthol and packed lightly with cotton which had been well boiled in distilled water and then saturated with hydronaphthol.

Two parts of the broken tooth were then prepared in the usual manner for replanting and firmly united together by an iridio-platinum screw and cement; the tooth was laid away in a sterilized napkin for the cement to harden.

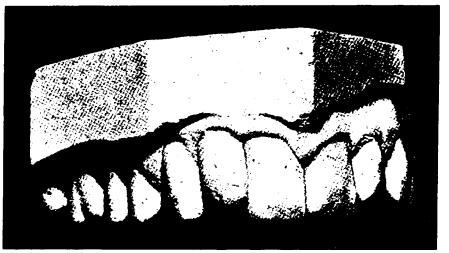


FIG. 3.

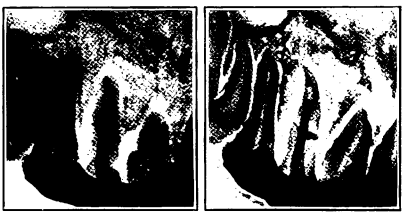


FIG. 4.

A lower impression was then taken, whereupon the patient was sent back to the hotel for rest. From this a thin vulcanite plate was made to cover the occlusal surfaces of all the teeth and about one-third of their other exposed surfaces.

By the time this was finished the patient returned. The lateral then received final preparations and was replanted, and the two central incisors were by gentle pressure forced into their proper positions.

An impression was taken, a metal die made, and a splint of No. 30 gauge pure gold swaged to cover a good portion of the crowns of the six anterior teeth.

When this was cemented in place I was assured that the replanted lateral and the two dislocated centrals would be held immovably in position.

Upon inserting the lower vulcanite guard-plate, the thickness of the material over the occluding surfaces of the posterior teeth prevented the upper and lower incisors from coming in contact, and thus it was impossible for any pressure to be brought upon the gold splint or the teeth under it.

During the next two weeks the patient called daily (Sunday excepted) when particular attention was given to the spraying of the teeth and interdental spaces with hydronaphthol. During this period there was no suffering whatever, and the patient's general condition had improved to such an extent that she was able to return home.

Several weeks later she returned when I was greatly distressed to find a little pus between the replanted lateral and the central. This proved to be the result (?) of the exfoliation of a part of the septum which evidently had been injured beyond repair at the time of the accident.

This trouble soon cleared up and the case continued to progress favorably.

The patient was seen from time to time, and on December 24, 1908, the splint was removed, when the teeth not appearing as firm as desired, it was replaced and worn until April 12, 1909.

At this time the splint was removed again and, all conditions appearing normal, it was not replaced.

The patient, as a matter of precaution, still wears the lower guard-plate at night to prevent injury to the front teeth in case she "grits her teeth."

The cast of the case, as shown in Fig. 3, was made from an impression taken on June 7, 1909, about thirty weeks after the accident. The skiagraph, Fig. 4, was taken immediately upon the completion of the operation and shows the splint in place and also the platinum dowel, as well as a faint black line indicating the thin film of cement at the point of union.

To me a very remarkable feature of this case was the entire absence of pain.

By being driven up into the process the lateral must have caused serious injury to the surrounding parts, and its pulp was torn asunder. The process within the arch adjoining the centrals must have been broken, and yet there was absolutely no suffering after the first day's soreness.

My success in replanting, I believe, has been due to the extreme care with which every step of the operation is conducted. The socket

and adjacent parts are maintained in a perfectly aseptic condition by the use of hydronaphthol spray; cotton and spunk pledgets are thoroughly boiled in distilled water and kept in hydronaphthol solution. Before handling the tooth my hands are thoroughly scrubbed with carbolic soap. When the tooth is replaced the care of same does not cease. A gold splint is always put on to hold it securely in position, and whenever deemed necessary a rubber guard-plate, as previously described, is also worn.

The patient is given a chip-blower to be used as a syringe, and with it hydronaphthol is forced into the interdental spaces several times daily, and thus they are kept clean.

Besides this care, I see the case almost daily and thoroughly spray and cleanse the teeth as long as the splint is on. I insist upon the splint being worn for eight to twelve weeks in ordinary cases, and longer when necessary as in this case.

Replanting is considered a practical operation in my practice. My first case (an unfavorable one) failed within a year. My second, a lower molar, is still doing good service "in its nineteenth year." Since then many teeth which otherwise would have been lost have been restored to usefulness by this operation.

Empyema of the Maxillary Antrum.

By Henry Glover Langworthy, M.D., Dubuque, Iowa.

Disease of the maxillary sinus has been so frequently discussed in dental literature that, were it not for certain surgical principles to be insisted upon by both specialist and dentist alike, further repetition on so familiar a subject would seem unnecessary. There are two points in particular which must be reiterated in dealing with affections of this sinus, and that is, first of all, a thorough study of anatomy of the superior maxilla. A correct idea of treatment can not be obtained without considerable knowledge of the topographical anatomy of the antrum as obtained from moist sections, plates, plaster casts and dried bones. Every dentist should have in his office a few atlases and special treatises on the subject. The second point which must be emphasized, if the dentist is to supervise the case, is a frequent examination of the nose, as well as following operations and post-operative treatment by the side of the consulting surgeon. Until some such plan as the above is followed, little advancement can be expected by the average dentist or specializing physi-

cian. The following observations may be said to be the facts as accepted to-day in regard to the surgical treatment of the condition.

Etiology, Clinical Anatomy and Pathology.

The maxillary sinus while frequently diseased, is, perhaps, no more so than the other accessory sinuses. Infection takes place from two sources: (a) the nose; (b) about the teeth. The nose and throat specialist will naturally see the cases arising from an intra-nasal origin, while the dentist will draw his cases from dental clinics following alveolar routes. With the possible exception of the antrum of Highmore a single accessory sinus is rather rarely involved alone.

The antrum naturally comes within the domain of dentistry by reason of the second bicuspid and first and second molars mounting into direct relation with the floor. Often, indeed, the projecting roots are covered with little more than a thin delicate covering of mucous membrane. The normal outlet of the sinus (*ostium maxillare*) is situated in the upper portion of the naso-antral wall beneath the middle turbinate, and in such a position as to render drainage impossible under ordinary conditions. It readily follows, therefore, that when inflammation is present the first principles or rational treatment must be the artificial establishment of free and uninterrupted drainage and ventilation. Half-way ventilation and drainage is little better than none at all.

The etiology of inflammatory disease of the antrum is yearly becoming more clearly understood. Disease of contiguous structures, such as the outer wall of the nose, the teeth, alveolar processes and bony palate, often result in direct infection or by lymphatics and blood vessels. Practically any condition within the nose that will cause blocking and interference with normal ventilation and drainage will in time produce antral changes. Of the constitutional diseases, syphilis and tuberculosis also play a considerable part. The exciting cause is a micro-organism resulting in infection of the mucous membrane lining of the wall of the sinus.

The pathological picture in acute inflammation is an exudate (serous or purulent) from the infiltrated submucous tissue. In many cases resolution by reabsorption of the exudate takes place. If this does not occur either from natural or artificially induced causes a considerable quantity of discharge takes place through the normal outlet, but often not sufficient to prevent the case from passing into more serious and perhaps permanent changes. It is surprising sometimes how quickly ulcerations and granulations will form in antral disease, and even slighter degrees of bone necrosis. In the chronic cases foul-smelling pus, polypi and sequestra is the rule. To conclude the paragraph the condition present will

include one of four-mentioned subdivisions from which a fairly good general idea of treatment can be thought out: *i. e., acute and chronic catarrhal and acute and chronic suppurative sinusitis.*

Symptoms and Diagnosis.

Cases of antrum involvement may roughly be divided, as has been mentioned, into two distinct groups:

First: A group when the chief features are the nasal symptoms. Second: A group where the prominent features are oral and about the teeth.

The characteristics of the group seen in the nose and throat clinic are unilateral discharge of pus or sero-pus from the nostril, dull aching pain over the cheek bone of the affected side, and often tenderness on pressure. In long-standing cases the secretion flows back into the naso-pharynx during the night and is expectorated next morning. Foul odor is also noticeable to both patient and surgeon after a variable period. Pain, although referred to various parts of the face and head, is usually in the region of the malar bone. In acute suppurative cases we have the additional symptoms of fever and prostration. Where the infection is per a nasal route the teeth and mouth are found normal, and there is nothing to draw attention to them in any way. Nasal examination is here necessary for a diagnosis. Examination in the acute stage reveals a purulent secretion in the region of the middle meatus with considerable redness and swelling of the mucous membrane lining the middle turbinate. The onset of the above symptoms, together with the examination as stated, at once points to the antrum as being the seat of trouble. It is absolutely necessary, however, before going ahead to prove whether or not the frontal and anterior ethmoidal sinuses are not the ones really diseased, and the antrum merely acting as a reservoir. To differentiate these the pus is wiped away from under the middle turbinate, and the patient's head turned on the side opposite the infected antrum to favor the outflow of pus. If after remaining in this position for a short time the middle meatus is re-examined and pus again found, the antrum is probably involved. We can further probe the outlet of the frontal sinus after wiping away all pus and see whether additional discharge follows probing in that region. To still further clear the diagnosis it is necessary to introduce a trocar and cannula through the naso-antral wall in the inferior meatus under cocain anesthesia and wash out the antrum. If pus is found in the direct washings the antrum is, of course, involved. Also by trying the same experiment (posture test) after the antrum has been washed clean, pus will not reappear when holding the head on the opposite side. Transillumination of the antrum is also employed. An

affected sinus is always dark. To recapitulate, a positive diagnosis is best made by puncturing the antrum through the nasal wall and finding pus.

Teeth Cases. In the class of cases where symptoms point chiefly to the mouth a rather different picture is presented. When empyema of the antrum is secondary to caries in and about the teeth we have few, if any, nasal symptoms. The oral disturbances, however, draw attention directly to the offending tooth or immediate region. It may also be difficult for the patient to chew on that side. In this way a suppurative process about a root with ulceration or carious fistula is easily discovered. The lymphatics and blood vessels are often the connecting links between antrum infection and inflammation about the teeth, so that this point must always be taken into consideration. Many dental cases give roughly the following history: No history of any special nose or throat trouble and no nasal discharge. A single molar, perhaps, filled years before and extracted some years later. After extraction a discharge continued from the socket, resulting in odor and a bad taste in the mouth. A fistulous tract may occasionally be found leading upward for a short distance or even into the antrum. Lack of pain is sometimes a prominent feature. As most dentists are probably more familiar than the author with the curious onset of many of the dental cases further repetition would seem unnecessary.

Treatment. In the simple acute or subacute forms of suppuration of the maxillary sinus where there are few granulations and no carious bone, lavage of the infected sinus with warm antiseptic solutions is often followed by cure. Irrigation of the maxillary sinus, however, can not be effected through the normal opening, hence a trocar with cannula attachment must be introduced beneath the inferior turbinate bone a little above the floor and forced directly outward into the sinus. After penetrating the naso-antral wall about one inch from the external orifice of the nose the trocar is removed, leaving cannula *in situ.* Copious irrigations are then made directly through the tube. This procedure is especially useful and important in making a diagnosis, and sometimes in a few very early cases may establish a cure. A very practical method for surgical treatment of the sinus and the one ordinarily employed by the writer is to remove the anterior half of the inferior turbinate body with scissors or saw, puncture the wall near the floor of the nose and, finally, make as large an opening through the naso-antral wall as desired. The opening, if sufficiently large, shows no tendency to close. The antrum is reached by this means and thoroughly explored and cleaned. The first dressing usually consists in a simple sterile gauze packing with or without vase-

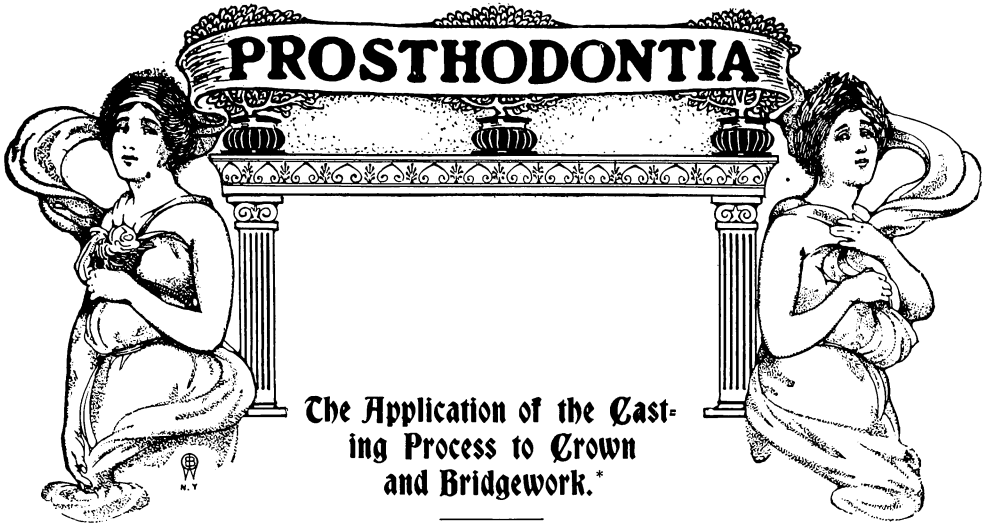
lin for twenty-four to forty-eight hours. Later dressings are usually not employed. The cavity is left open for both drainage and ventilation. Any granulations which continue to form are removed from day to day.

Alveolar Route.

When a tooth has already been extracted, or, if by reason of a carious fistula, the bicuspid or first or second molar can not be saved, the tooth is extracted and a large opening is made with chisel or bone curette into the antrum. The alveolar opening must be large enough to admit the little finger. Small openings through a tooth socket must be condemned as utterly unfit to meet conditions present. Not only does the author insist on a large opening here, but a second counter-opening is usually made as well through the naso-antral wall. The operation is performed at the hospital under a general anesthetic. Drainage through a tooth site is not desirable under most circumstances.

Canine Fossa Operation.

The preliminary step in this operation, which so many cases demand, consists in elevation of the upper lip and an incision two inches in length at the labio-gingival margin. The tissues are then dissected free over the canine fossa, the upper lip retracted, and almost the entire anterior bony wall of the sinus removed. A second opening is then made out into the nose. All diseased tissue is removed and the cavity packed with a strip of gauze, the end of which is brought out through the opening in the nose. As a rule the anterior half of the inferior turbinate is removed either previously or at the same time as the opening is made in the nose. The mucous membrane and tissue over the canine opening is closed by suturing for first intention. At the end of the second day the gauze dressing is removed through the nose. All subsequent treatments are likewise made through the nasal opening. In cases where there is considerable caries of the walls of the antrum, polypi formation, etc., the canine fossa operation is the operation of election. The foregoing lines of treatment seem applicable to all suppurative forms of antral disease and should, as a rule, be given the preference over other less surgical procedures.



The Application of the Casting Process to Crown and Bridgework.*

By Hart J. Goslee, B.S., D.D.S., Chicago.

Bridgework.

If the casting process has revolutionized and simplified the methods of procedure in the construction of single crowns, it has also exercised the same influences upon all forms of dental bridges, where the field is even larger and where the possibilities are, therefore, greater. It is *particularly* applicable to bridgework, and has revolutionized all former methods because of insuring a degree of accuracy of adaptation and of strength heretofore impossible; and it has simplified the entire field of effort because these same possibilities will reduce to a minimum the number of methods formerly used or now found to be necessary.

This is evidenced from one viewpoint, at least, by the acknowledged success and permanency of the inlay, and since the cast filling must be regarded as affording a means of restoration quite equal to an artificial crown, and in some respects even preferable, it must be classed as the ideal type of anchorage for bridgework.

Whenever and wherever it may be used the natural crown of good sound teeth, which heretofore would have been mutilated to a greater or less extent in obtaining anchorage for bridgework, may now be conserved, and at the same time equally good, if not better adapted, stronger, and, in most instances, less conspicuous attachments may be made thereto.

Attachment to Natural Crowns of Teeth.

With such possibilities and advantages the inlay, therefore, affords a more or less universally applicable method of obtaining anchorage to the *crowns of remaining natural teeth,* and, hence, its use must ultimately supersede all of the various other methods, such as open-face crowns, "groove," or so called "Carmichael," "plate and pin" attachments, etc., which until now have been in common use.

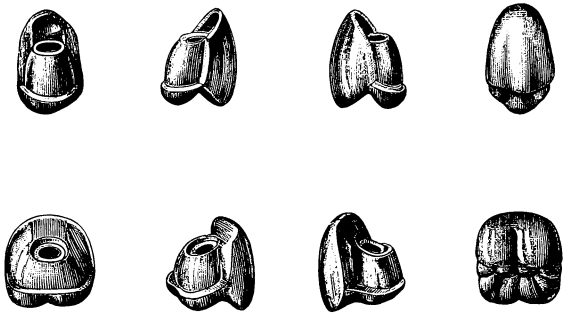


FIG. 422.

Attachment to the Roots of Teeth.

Where the natural crown has been lost or sacrificed, however, to an extent which demands its complete restoration, and where the attachment must, therefore, be made to the root itself, some form of artificial crown must, of course, be used.

For this purpose two general types of constructions are universally applicable—the *all-porcelain, or porcelain-face, crown, with a cast base,* for such teeth as are within the range of vision, or, in other words, for the anterior teeth; and the gold crown with cast cusps for the posterior teeth thus embracing, when combined with the inlay, but *three* types of attachments which are generally applicable to, and which will meet the average and ordinary requirements of *fixed bridgework.*

Fixed Bridgework.

Since fixed bridgework constitutes simply an assemblage of attachments to the supporting teeth, or roots, and of the intervening "dummies" which substitute the missing teeth; and since the three types of attachments just mentioned are universally applicable for the former purpose, it is then only necessary to determine what form or forms of "dummy" will best meet the requirements of the latter purpose.

Posterior Dummies. As the advantages to be obtained by the use of replaceable teeth are especially valuable in and particularly essential to the construction of fixed bridgework, *some form of porcelain crown, or tooth, with a cast backing,* undoubtedly affords the ideal means of constructing posterior dummies in the replacement of such teeth as are within the range of vision. For this purpose the Davis, White, Justi, Twentieth Century, and other similar forms of porcelain crowns with detachable dowels, may be so ground as to be applicable to a large proportion of cases, although a modification

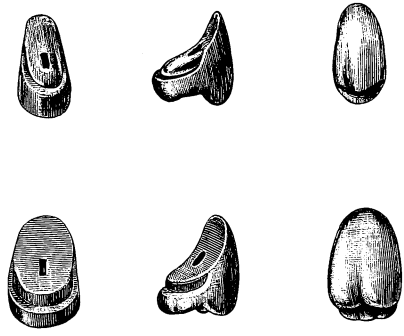


FIG. 423.

of form more especially adapted to bridgework has been suggested by the author, and is now made by the Consolidated Dental Mfg. Co., of New York, Fig. 422, and the Brewster Dental Company, of Chicago, Fig. 423. While these forms will be found well adapted and more or less universally applicable to this purpose, the ordinary diatoric, or even the pin teeth intended for vulcanite work, may also be used in more or less similar manner.

When properly backed with a cast backing almost any of the various forms of replaceable porcelain teeth possess a maximum of strength, and yet afford a minimum display of metal, thus making a stronger, better and much more esthetic type of construction than the ordinary thin facing and gold occlusal surfaces now in common use. Indeed, the display of gold cusps in the construction of fixed bridgework has always been regarded as flagrantly inartistic, and some means of dispensing with them has long been desired.

Anterior Dummies. The actual requirements for anterior dummies differ mainly in that the extent of absorption in the region of the six anterior teeth in particular usually

demands a more or less *thin* form of tooth or facing. For this reason the separable dowel crowns, if ground as illustrated in Fig. 424, may be occasionally utilized wherever the extent of absorption is sufficient to admit, yet they are not universally applicable, though all of the advantages of a replaceable form of tooth which they possess are equally desirable.

While the ordinary long-pin flat-back facings may be used, as suggested in the construction of single anterior crowns, or the Steele and similar forms of so-called bridge-teeth, or even simple vulcanite teeth,

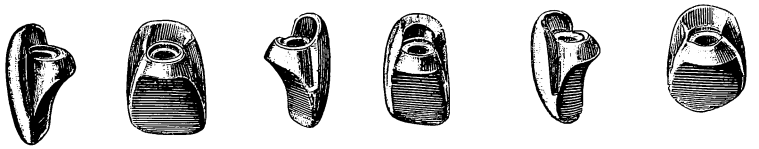


FIG. 424.

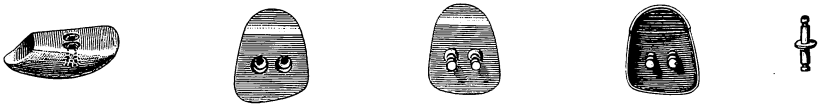


FIG. 425.

the author has suggested a type of tooth for this purpose which seems to offer a maximum degree of strength, the thinness usually demanded in application to the replacement of the eight anterior teeth, and all of the advantages of the replaceable form of tooth combined.

This type of tooth is identical in size and form with the ordinary facing, but instead of having pins in it, holes are placed in exactly the same postion and relation to the porcelain and to each other. These holes have a very slight shoulder or seat at the surface of the porcelain exactly like the Davis crown, only smaller, and are slightly countersunk at the lower ends. The shoulder at the surface of the porcelain affords accommodation for the thin diaphragms on the pins, which insures perfect parallelism between them; and the countersink at the end of the holes affords accommodation for a slight surplus of cement in mounting (Fig. 425).

The diaphragm is in the exact center of the pin, and is about 15 gauge in diameter and 30 gauge in thickness, and the pin is from 17 to 18 gauge, with each end notched as a means of facilitating the attach-

ment of the pins to the cast-metal backing, on one end, and of the porcelain facings to the other ends, with cement. They may be made of iridio-platinum, gold and platinum, clasp-metal, or any of the German silver alloys.

These facings are now in the hands of several manufacturers and will doubtless soon be procurable.

With these two general types for *anterior* dummies, with the former type for *posterior* dummies, and with *cast-gold* dummies for such places in the posterior part of the mouth as present conditions of absorption and occlusion which preclude the use of any form of porcelain tooth or facing, embracing in all but three or four general types, it will be observed that the actual requirements in connection with "dummies" for fixed bridge-work are practically included.

Inlays as Abutment-Pieces.

In the application of inlays as "abutment-pieces" or "attachments" for fixed bridgework, in the formation and preparation of the cavity, every precaution must be observed to insure a secure mechanical fixation of the inlay. This is necessary because any inlay for a simple restoration, much less one which is to be utilized as a support for bridgework, which depends *entirely* upon cement for its retention, will usually fail, and particularly if it is to be subjected to stress in any direction.

In addition to such favorable mechanical formation, at least one, and sometimes two, short pins, made of from 18 to 20 gauge round iridio-platinum wire, should invariably be used in teeth having vital pulps, and larger and longer ones where the pulp has been removed, as a means of obtaining every possible degree of security and permanency in the attachment of the inlay to the tooth.

When such pins are used in teeth having vital pulps, holes should be drilled (using a bur of the same size as the wire) into the base of the cavity at a point which will be least likely to expose the pulp, and parallel with the axial walls of the cavity, and with each other, if more than one is used. They should extend into the dentin as far as possible without endangering exposure of the pulp, and project beyond the hole and into the body of the cavity sufficiently to admit of their becoming securely attached to the wax in molding it to the cavity. When so fitted they should then be threaded with a "tap" or notched with a file to insure attachment of gold in casting and of cement in mounting (Fig. 426 A).

In pulpless teeth one pin is all that is necessary, but this should be about 16 gauge in size and should extend through the pulp-chamber and into the canal to a slightly greater extent (Fig. 426 B). In cases where it seems impossible to drill holes of such depth as will insure adequate

strength in the attachment of the inlay to the tooth, without endangering the life of the pulp, devitalization may be demanded and should be resorted to when any question of doubt or uncertainty arises.

FIG. 426.A.

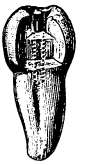


FIG. 426.B..

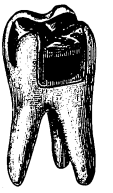


FIG. 427.

FIG. 428.

Formation of Cavities in Posterior Teeth.

In the preparation of cavities in the posterior teeth for inlays which are to support bridgework, care must be exercised to break down and cut away all thin, frail walls; to form the cavity with a square, flat base, with the axial margins parallel or slightly diverging, and beveled to the extent of properly protecting the enamel rods. Extension for prevention must also be observed in following out

pits and fissures and particularly in cutting away the approximal surfaces to an extent which will afford freely exposed and self-cleansing margins.

This is especially necessary upon the approximal surface adjacent to the space where teeth are missing and against which the artificial bridge tooth is placed. The requirements of contact between the filling and the artificial tooth, and of strength in their subsequent attachment, at this point, demands that the cavity be sufficiently broad bucco-lingually to afford opportunity for this and at the same time allow a free exposure of the cervical, buccal and lingual margins. The outlines of the cavity and filling in Fig. 427 will illustrate the surface of the filling to which attachment of the adjacent artificial tooth should be made, and the extent to which the margins of the filling should be allowed to remain freely exposed.

Small stones of various sizes and shapes will be found extremely useful in this work, and when they may be used are much preferable to burs, and much easier for the patient.

Several typical types of cavity formation adapted to inlays, which are to be used as abutments for bridgework as applied to the posterior teeth, are illustrated in Fig. 428.

(*To be continued.*)

Evidence and Significance of Tooth Eruption.

By Varney E. Barnes, D.D.S., Cleveland.

Read before the American Society of Orthodontists, October, 1908.

Associated with orthodontic procedure tooth eruption has a significance in that it antedates occlusion, and thereby allows of earlier diagnosis and preventive treatment.

The eruptive tables are well known and indicate when teeth may be expected *under all conditions,* for they allow great latitude. After close observations extending over a period of ten years, I am certain that these charted eruptive periods are far from correct as regards the normal. I find that, usually, the earlier teeth erupt the better are the developmental conditions in the bone structures of the mouth. This would indicate that the earlier eruptive periods are more nearly correct. Evidence to support this lies in the fact that irregularities present generally in crowded conditions, which mean retarded eruptions. The tables have been based upon a number of *cases presumed to be, but which were not normal.* To-day irregularities are conceded to be the rule for the permanent teeth, and I believe the rule applies to the temporary teeth also, the deciduous irregularity preceding the permanent irregularity in a characteristic form (Figs. 1, 2, 3, 4, 5, 6, 7 and 8). General acknowledgment must soon come of the fact that deciduous denture deformities are as prevalent as those of the permanent denture. The best expression of this was that of Dr. Wilbur M. Dailey, who, on April 18, 1905, said:

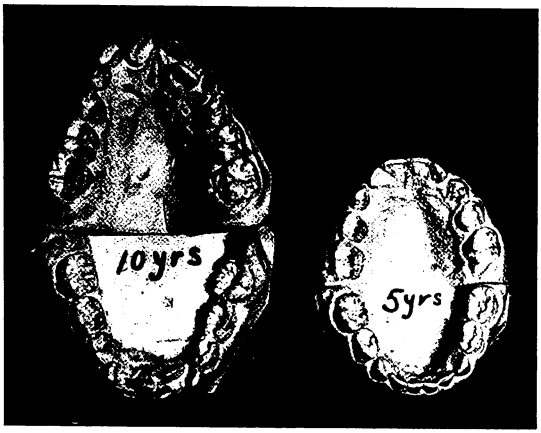


FIG. 1.

Fig. 1.—General maxillary and mandibular deficiency in cases of sisters five and ten years old.

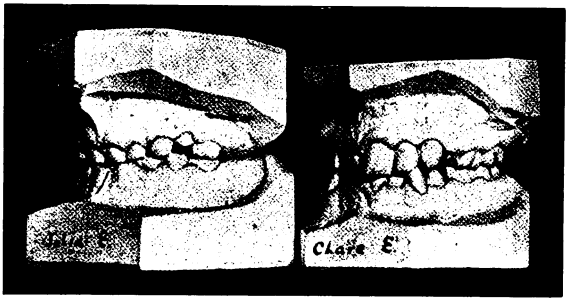


FIG. 2.

Fig. 2.—Characteristic crowding, close bite and inverted compensating curves in cases of sisters.

"Malocclusion of the deciduous teeth exists in the same proportion as it does in the permanent teeth" (*Dental Cosmos*, December, 1905). Prior to that the writer said: "The most serious cases of malocclusion are clearly indicated in the temporary teeth, may be diagnosed as early as three years, and are far more frequent than the dental profession supposes" (Northern Ohio Dental Association, June, 1904; *Dental Summary*, May, 1905).

Teeth which erupt under crowded conditions wedge into rotated and inclined positions and show the almost constant recurrence of one con-

FIG. 3.

Fig. 3.—Characteristic temporary arches—brother and sister, six and four years nine months. Six-year cast showing incisors and first molars erupting into small arches.

dition—smallness of the apical arch in maxilla, mandible or both (Figs. 9 and 10). This would indicate that malocclusions are results of faulty root locations upon malformed bone.

There is a theory that teeth erupt close together, wedging and stimulating the bone to develop in the region of each tooth so as to permit it to assume a correct position in the arch. This theory of so-called sectional development assumes that the space necessary on account of the greater width of permanent incisors and cuspids over temporary incisors and cuspids appears, or increases greatly, just prior to the eruption of the permanent tooth; the whole width development increasing in periods up to the twelfth or thirteenth year, when the cuspids are erupted. This is the theory that led to that old evil advice, "Wait until the child has all the permanent teeth anterior to the first molars before beginning regulation." It has no real evidence to support it.

There is also the theory of early growth or developmental spaces between the temporary teeth. Talbot says: "The mouth of a child at the fourth or fifth year normally presents a well-developed jaw. The curves

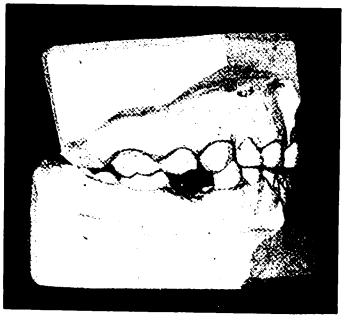


FIG. 4.

Fig. 4.—Cast of five-year-old patient—deficient spaces, overbite of upper and close bite.

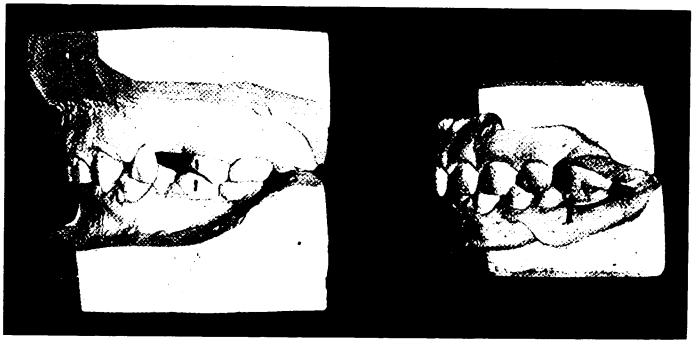


FIG. 5.

Fig. 5.—Casts of brother fourteen years and mother of patient of Fig. 4 in which the characteristic deformity is clearly shown.

are all graceful in outline, and the contour of the dental arch is well formed. This could hardly be otherwise, for the reason that the jaw is growing rapidly for the purpose of accommodating the permanent teeth, and the circle of the alveolar process is larger than that of the teeth. Spaces exist between the temporary teeth and, therefore, crowding can not take place."

The necessity for spaces has been written of and known for a long time. Previous to December, 1906, however, no one seems to have definitely located those spaces or indicated in any manner how large they should be. At the time mentioned the writer published in the *Dentist's Magazine* an article in which attention was called to some observations: First, to the prevalence of irregularities; second, to the three develop-

FIG. 6.

Fig. 6.—Casts showing deficient development of maxilla—brothers—transition of deformity from temporary to permanent teeth; eight years eight months and ten years eight months; and cast of maxilla of older boy showing progress and root expansion .

FIG. 7.

Fig. 7.—Casts of case at five years and nine years, showing characteristic deficiency of lower arches in both temporary and permanent teeth. Upper arches normal. Lower arches short and narrow.

mental directions, antero-posterior, vertical and buccal; third, to the seeming law of growth spaces, "the temporary central, lateral and cuspid plus their distal growth space equals or exceeds the width of the succeeding permanent teeth, in the normal child of four to five years of age."

Theories of Eruption and Development.

Continued observations of eruptions and development have indicated error in the former theories which are now modified and presented as follows:

1. Theory of width development. The width developments of maxilla and mandible are complete as far distal as the first permanent molars at from seven to eight years in the normal child.

2. Theory of developmental or growth spaces.

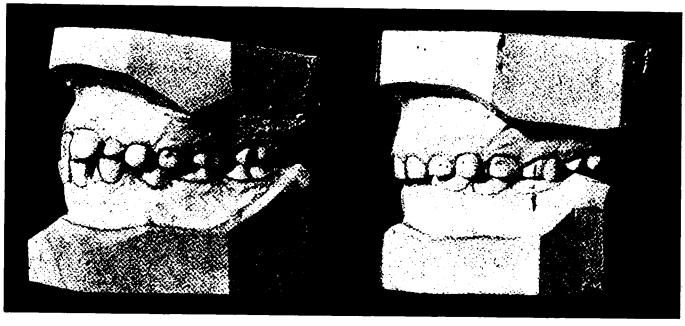


FIG. 8.

Fig. 8.—Characteristic open and close bites shown in temporary teeth and in permanent teeth erupting.

(a) The temporary laterals and cuspids plus their distal growth spaces exceed in width the succeeding permanent laterals and cuspids in the normal child of from four to five years of age.

(b) The temporary centrals plus their growth spaces exceed the width of the permanent centrals in the normal child of seven to eight years.

3. Theory of anterior-posterior development.

That portion of the anterior-posterior development of the jaws between the region of the lateral and the distal surface of the second temporary molar is complete in the normal child of four to five years of age.

4. Theory of eruption without lateral contact.

Temporary and permanent teeth normally erupt without lateral or any contact with other teeth until in occlusion.

In the study of the best obtainable dentitions (Figs. 11 and 12) we find the teeth touching only at the contact points, the roots well separated and broad V-shaped interproximal spaces filled with gum and bone tissue.

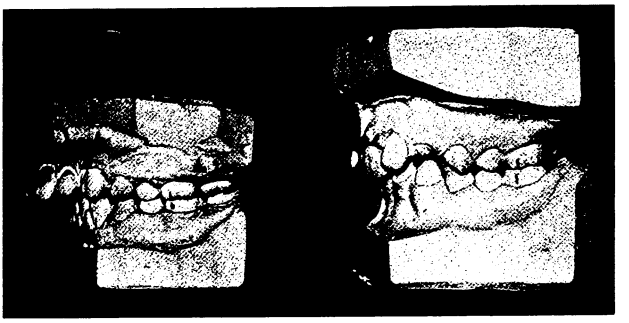


FIG. 9.

Fig. 9.—Two cases of small apical arches of most decided character.

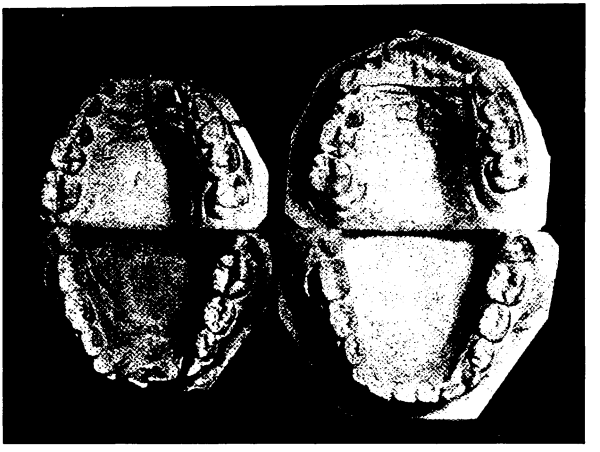


FIG. 10.

Fig. 10.—Small apical arches. Cast of patient nine years three months, and partial correction in contrast.

These conditions are found at about the age of twelve. Previous to that age the teeth are not in contact, excepting possibly the incisors. To produce these conditions only one hypothesis seems plausible, and that is, the width development of maxilla and mandible is complete as far posterior as a point distal of the second temporary molars, at from seven to eight years of age, in order that the permanent and temporary teeth may *pierce* the gums and the permanent teeth be *without contact with one another until after they reach a vertical development equal to that of the next tooth in occlusion.*

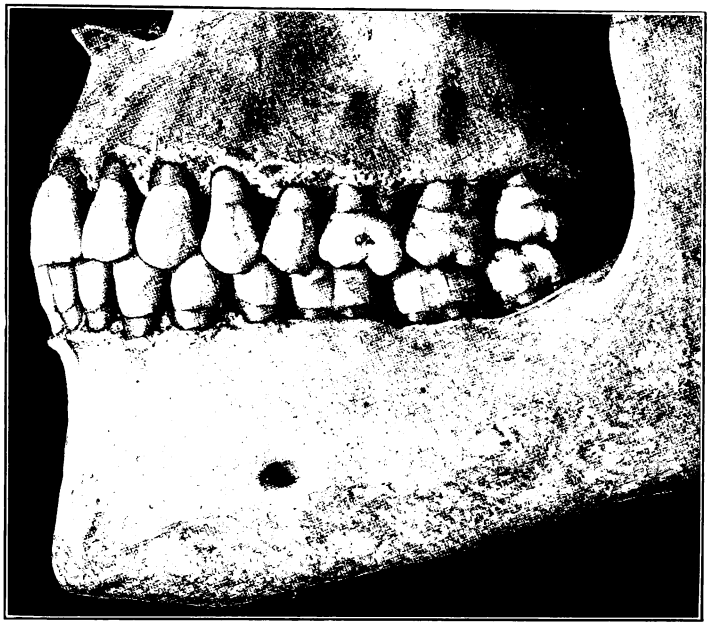


FIG. 11.

Fig. 11.—Normal occlusion (Turner).

Comparison of Temporary with Permanent Teeth.

The first evidence to support this hypothesis exists in the tooth forms (Figs. 12 and 13). The temporary teeth differ radically in form from the permanent set. Their crowns are short. The incisors, cuspids and the mesial surface of the first molar have no contact. The distal surface of the first molar and the mesial and distal of the second molar have small contact very close to the occlusal margins. The enamel on the buccal and labial surfaces presents a great slope and abruptly terminates in a ridge just before merging into the cementum. The necks are well constructed, the mesial and distal portions of the crowns have marked concavities extending well up to the occlusal margins, permitting teeth and gum to merge into a continuous contour. The incisors and cuspids are proportionately very broad at the incisive margin and abruptly slope to the cervix on the mesial and distal sides. The labio-lingual aspect of the incisors and cuspids is that of a wedge with the greater incline lingually, which would tend to erupt the

tooth outward. The absence of any wedge shape, mesio-distally and pointing away from the cervix, should indicate that the tooth was made to *pierce* the gums, instead of slitting them while crowding other teeth. The wedge and concavity toward the cervix mesio-distally would seem to indicate that crowding in eruption would tend to lock or rotate the teeth.

The permanent teeth have small mesial and distal contact surfaces (except the distal surface of the third molar), which rapidly slope away in convexity in all directions, then, on mesial and distal surfaces, gradually turn to concavity. This mesial and distal convexity clearly indicates that the teeth were never designed to be, or to erupt, in contact until after the teeth had erupted to an equality in vertical height. The teeth do not erupt all together and the surfaces, almost points of contact, present too fine an approximation for any reasonable expectations of teeth erupting with mesial or distal convex surfaces balanced, sliding along first a concavity and then a convexity to contact. The wedging into position is thus absurd, especially as the wedge shape of the incisors and cuspids is labio-lingually with the greater incline lingually and, therefore, tending to erupt those teeth labially.

The cuspids have inclines mesially and distally (Fig. 11) with the greater on the distal side tending to force the tooth to the mesial in eruption. The first upper bicuspids have inclines on the buccal cusps with the greater on the mesial tending toward a distal position, but possibly counteracted by the mesial inclination of the lingual cusp. The second upper bicuspids have the greater incline on the distal side of the buccal cusp augmented by the mesial inclination of the lingual cusp and showing a mesial tendency in eruption. This brings us to the consideration of a second evidence.

The temporary molars exceed the succeeding bicuspids in mesio-distal diameter. This excess in width has been erroneously said to be for the relief of any crowding anterior to the first permanent molars. X-rays show the second bicuspids between the roots of the second temporary molar, and where there is even an approximately good arrangement of the anterior teeth the second bicuspid erupts to the mesial, leaving *a considerable space mesial to the first permanent molar.* At the time of the eruption of this second bicuspid (about ten to eleven years) there is a considerable growth taking place posterior to the first molar. This is preparatory to the eruption of the second molar, and it brings a mesial pressure which forces the first molar forward (Fig. 14). Were it not for that extra mesial space the bicuspids would not have time for full vertical eruption and would be most liable to be caught and locked in or rotated (witness that very common condition in the crowding of irregularities). Nature has thus wisely endeavored to prevent stress in bicuspid

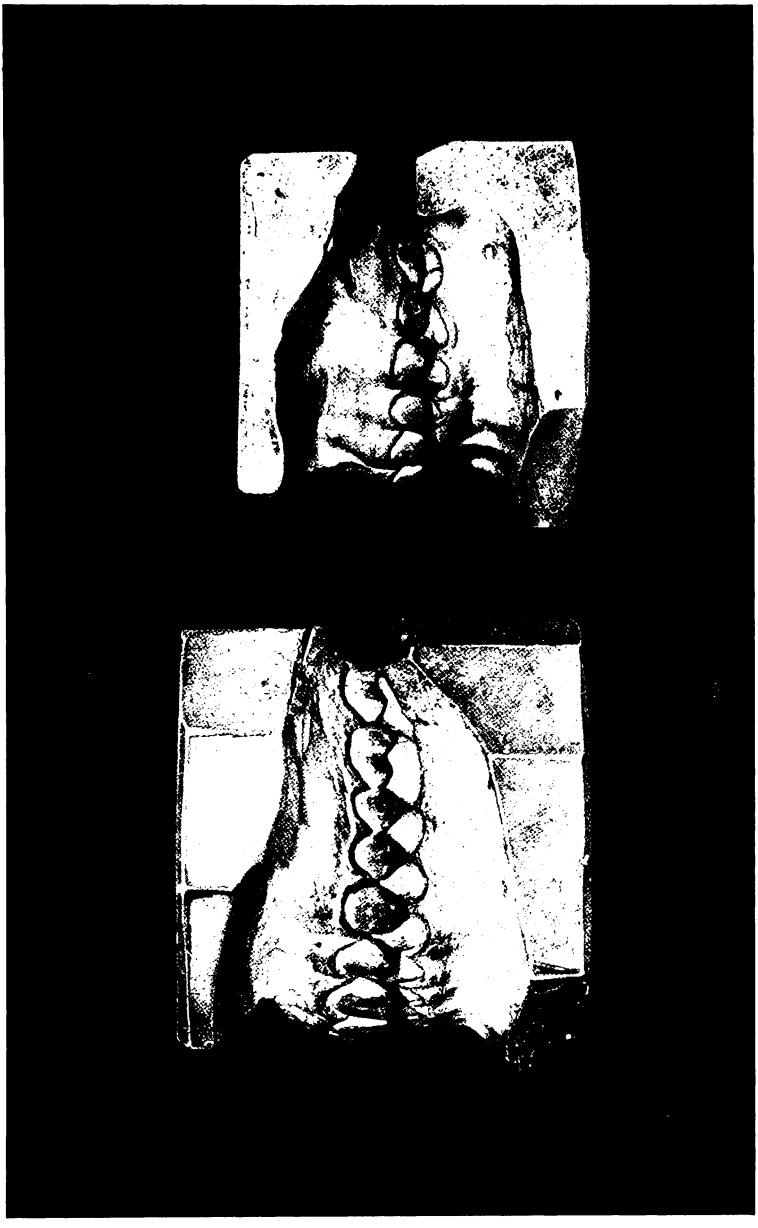


FIG. 12.

Fig. 12.—Normal dentitions (lower of temporary deficient).

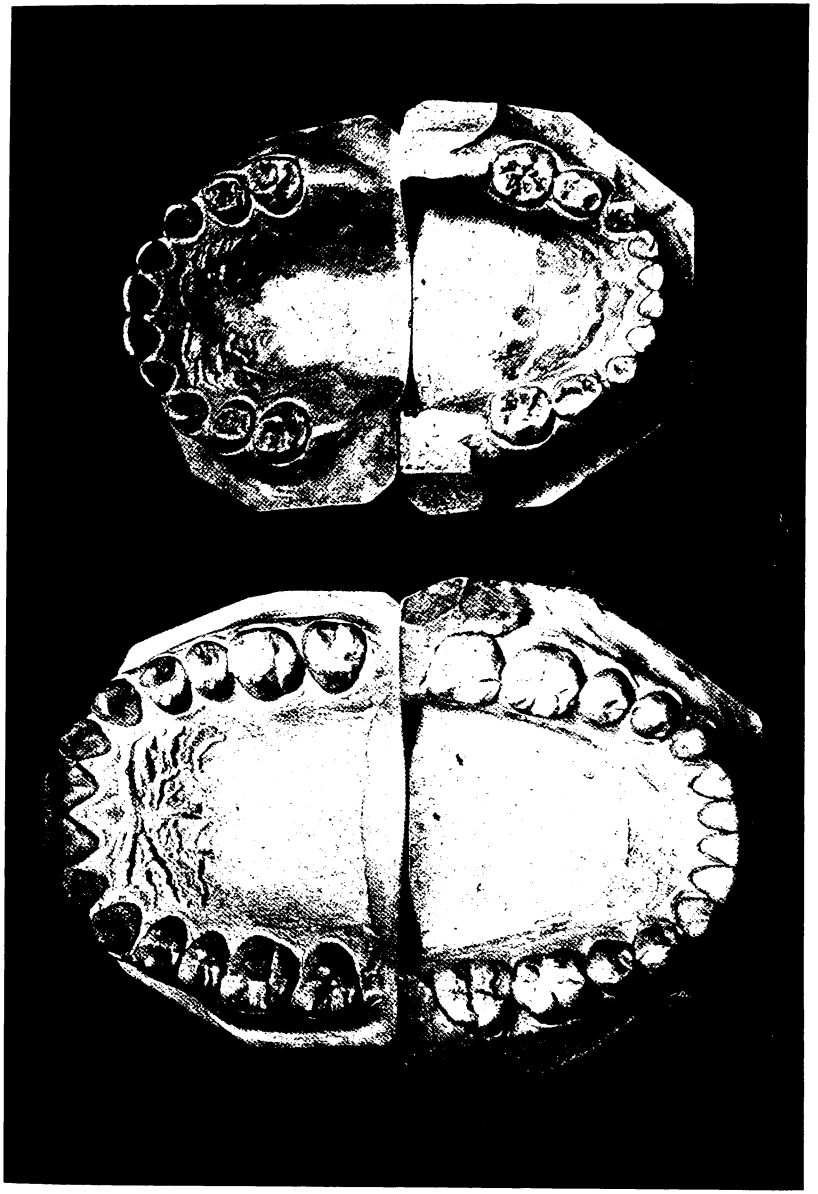


FIG. 13.

Fig. 13.—Contrast in forms of temporary and permanent teeth.

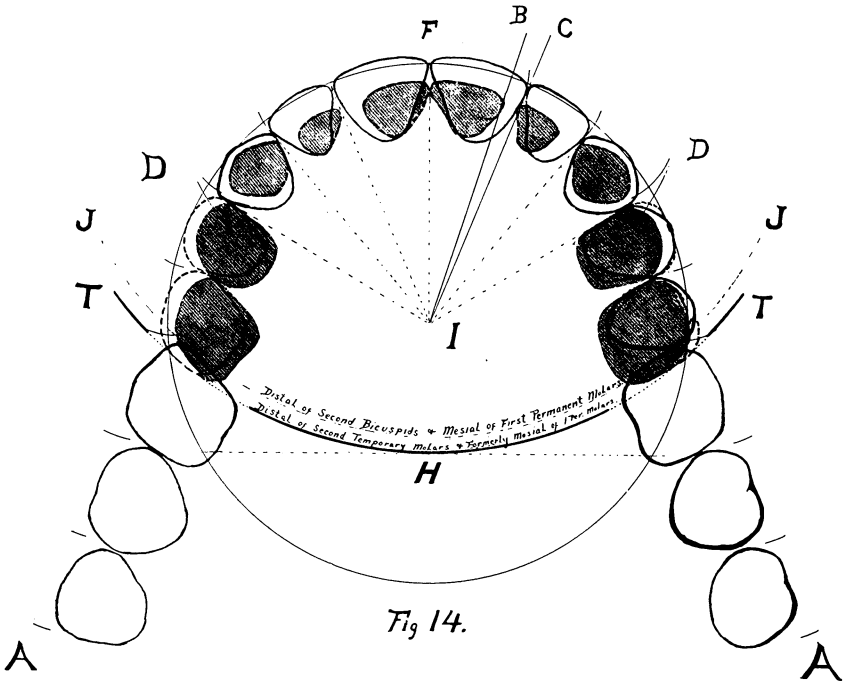


Fig 14.

Fig. 14.—Illustrating the position of second temporary molars and first permanent molars and the shifting forward of the first permanent molars while bicuspids are erupting.

eruption. Why not also for the incisors and cuspids? The very forms of all the teeth are such as to make rotations extremely liable under stress eruptions, and the very prevalence of rotation of all teeth, incisors to molars, is evidence that wedging in any form is not normal.

The point raised in regard to the *piercing* of the gums, instead of *slitting,* necessarily a result of wedging eruption, applies even more forcibly to the permanent teeth. It is an acknowledged fact that pyorrheal conditions are associated with irregularities in tooth positions. It is also acknowledged that these malpositions are generally associated with crowding in eruption. Crowding in eruption means that the gums are *slit,* that the labial and lingual sections are separated and that flaps form, preventing proper cervix constriction, and thereby predisposing to irritation, then inflammation and pyorrhea if not really being a chief factor. The *piercing* of the gums by teeth erupting without lateral contact would

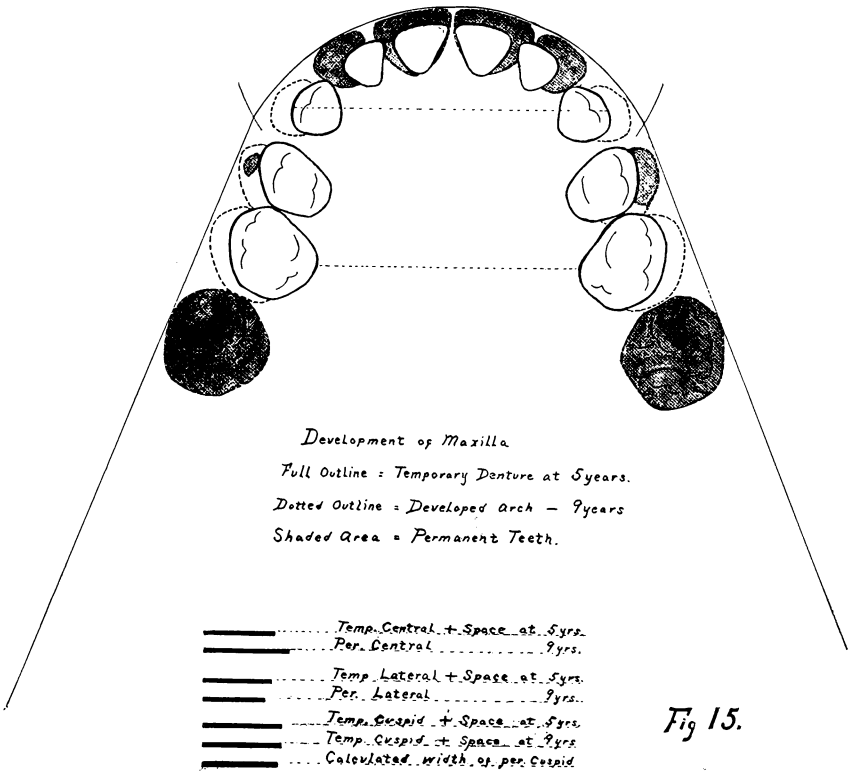


Fig. 15.—Chart from casts shown in Fig. 7, showing development in four years in normal upper arch.

leave a *ring of gum tissue* designed and prepared to contract about the cervix however constructed it might be.

Importance of Developmental Spacing.

An evidence of the necessity of the early complete formation of the developmental space distal to the upper cuspid exists in the fact that the lower cuspid erupts normally at about nine years to a position mesial to upper cuspid. To do so it must have its distal space early to prevent encroachment upon the area of the first temporary molar, which is not due to be lost until after the cuspid erupts (nine to ten).

Evidence of necessity for early developmental space distal to lower cuspid is found in the fact that *well-developed temporary arches contain*

that space at from four to six years (Fig. 13). A further evidence of the early width development, and of the size and time for growth spaces is in two sets of casts which I have been fortunate enough to obtain and study (Fig. 7). They are from the mouth of a well-developed child, and were taken at the ages of five and nine years. The five-year cast shows a full arch, singularly well contoured with large developmental

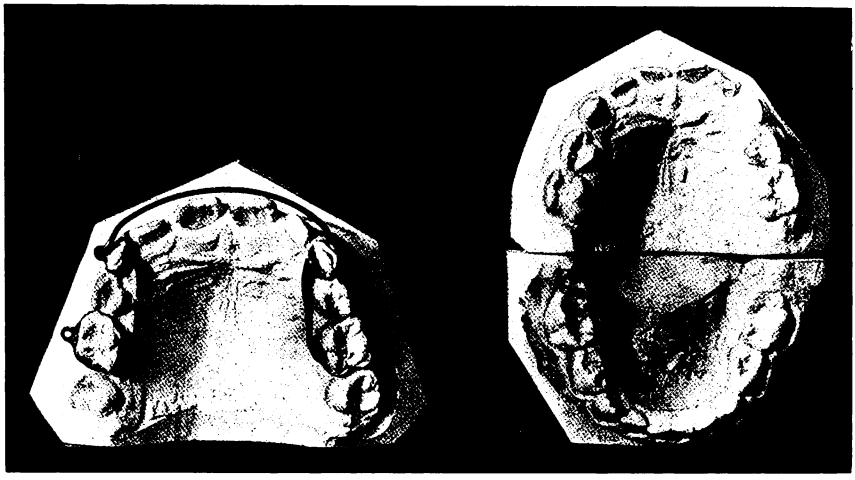


FIG. 16.

Fig. 16.—Casts (before and after treatment) from actual case, showing vertical hinge appliance used and space for normal eruptions. (Modification of Dr. Ainsworth's appliance.) (Root expansion.)

spaces distal to temporary laterals and cuspids, and smaller spaces distal to the temporary centrals. (The development in the mandible seems not quite so good as in the maxilla and is not presented as normal.)

The nine-year cast (Fig. 15) (maxillary calculated to be normal) shows the growth space distal to the cuspid remaining constant during four years and *exceeding the calculated width of the cuspid.* The permanent laterals are in position and occupy *less* space than the *temporary laterals* and their distal spaces. The permanent centrals are in position and occupy a *greater space* than the *temporary centrals and their distal spaces* occupied. There is also a widening of the arch to an extent which has a significance, in that the *excess in width of the permanent centrals over the temporary centrals and their distal spaces equals the excess in width* of the nine-year cast over the four-year cast, ***measured across the cuspids and second molars.***

This would seem to indicate that the *development was not sectional,* but *along the median suture* and *marked the completion of the width development.*

The lateral and cuspid spaces remaining constant indicates that the width development is complete at or before the time of eruption of the permanent central incisors.

In opposition to the theory of sufficient growth spaces to permit of tooth eruption without contact, is the fact that some apparently very good occlusions follow crowded eruptions. A careful study of these occlusions will reveal the fact that they are all too narrow to be ideal, their interproximal spaces are deficient, the teeth are forced tightly together, and in nearly every instance the third molars are not in a corresponding good relation with the remainder of the denture. What probably occurs in these cases is that, each tooth as it crowds into the arch does so *at the expense of part of the space of the next tooth distal to it.* This condition is reflected backward and finally culminates in the more marked displacement of the third molars. The evidence that seems to support this is found in the fact that *whenever teeth occupy distal positions they are almost always rotated,* and that there is universal malpositions of third molars, particularly noticeable in lower arches. Another objection to this theory is that we have some cases which are seemingly regular at twelve to sixteen years, and then suddenly distort from pressure associated with eruption of posterior teeth.

The significance of the theories advanced is, that we recognize the importance of beginning our corrective treatment of malformations at as early an age as the little patients can be handled intelligently (four to six years). It means that we should not expect any measurable amount of growth to occur through pressure *stimulation* in developmental directions which are long past their natural period of growth. It means that whenever we diagnose *root inclinations or small apical arches* (deficient growth spaces) we shall apply corrective treatment in a direct force to those roots in order to carry the temporary and permanent teeth at once to their true positions (Figs. 16 and 17 B, vertical hinge appliance principle). It means that generally no distal movements of teeth, whether intentional or not, are normal and that such movements must be recognized as compromises, for they encroach on the area of distal teeth yet to come. A further significance is that the classification of dental deformities according to the mesio-distal relations is too narrow and misleading, for that classification does not cover the temporary denture deformities (Fig. 7); at least it can not be definitely applied.

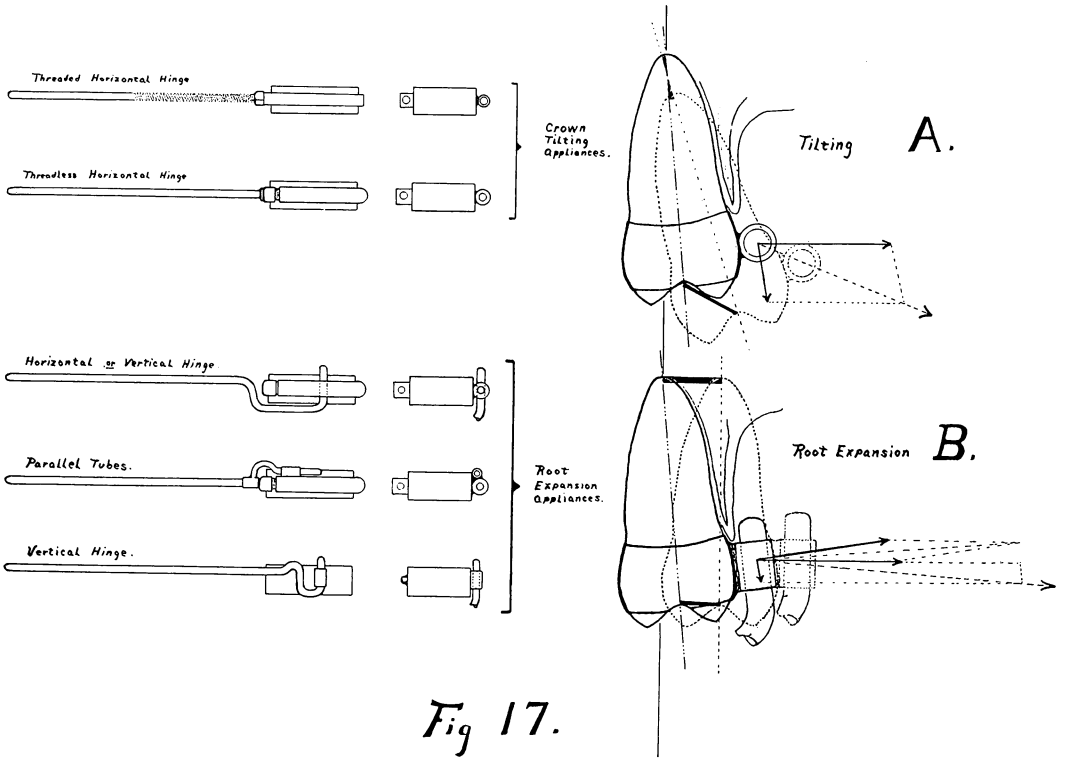


Fig 17.

Fig. 17.—Comparison of action of vertical and horizontal hinge appliances.

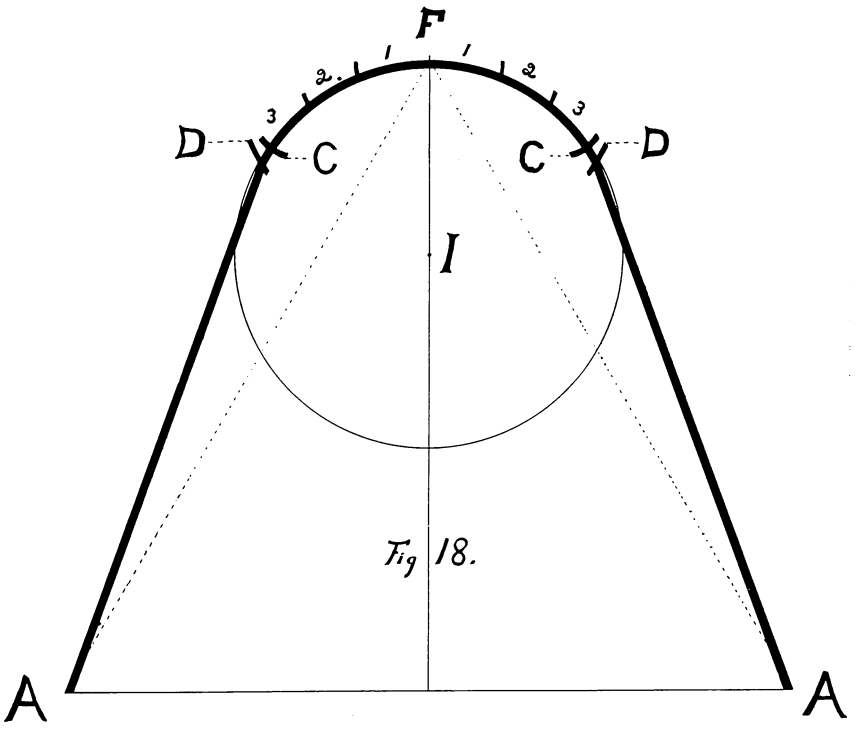


Fig. 18.—Illustrating the error in Bonwill's calculation and the possibility of an ideal arch for eruption.

Treatment and Retention.

In our corrective treatment of malposed teeth and malformed bone (using the horizontal hinge appliance, Fig. 17 A) we may secure, seemingly a very good occlusion and yet have faulty root and apex position. This occlusion may be retained for years, or, in some instances, permanently, but will usually fail soon after the removal of artificial retention devices, or upon the growth and pressure associated with the development and eruption of posterior teeth, or after separation for operative procedure. This failure in retention is due not primarily to failure of surrounding alveolar bone to hold the teeth in their new positions, but *failure to secure normal root positions.* In other words, *failure in retention is a result of incomplete or incorrect regulation.*

The problem to-day in orthodontia is *not retention,* but still *how* best *to treat* so as *to obtain approximately normal results,* or *how* or *when to compromise* after an intelligent effort to obtain that normal.

It has been claimed that roots will straighten up and the apical arch expand after the crowns are moved into relatively normal mesio-distal relations and retained. The idea of this entire claim is that the jaws may and do, develop in breadth at an age later than seven or eight years. It is dependent upon the crowded eruption theory. This expansion may possibly happen to a very limited degree through the *stimulation* of that portion of the vertical bone *development still incomplete,* but it is more improbable than possible that the width deevlopment is so stimulated, and it must not be depended upon to occur in too many cases now under indefinite retention.

What probably does happen in these conditions is that nature fills in new bone over the roots in their new positions after the teeth (chiefly the crowns) are tilted buccally, and there is a seeming expansion which is later seemingly improved after the removal of retainers with the consequent lingual tilting of the teeth to a contact.

Teeth have an eruptive force which raises them from their crypts and places them in occlusion. Under the wedging theory of eruption that force has been credited with aiding in jaw development. Under the early developmental space theory that force I credit with only vertical action upon the erupting tooth, it may exert a circumferential pressure on acount of resistance met, but the primary action is vertical. When this is realized and associated with the fact of almost universal small apical arches the premature loss of deciduous teeth will not be credited with being so great a factor in the causation of malocclusions as it now is. I do not mean to minimize it as a factor, but would take from it the credit due to deficient bone development.

The correctness of the theory of sufficient growth at seven to eight years to permit permanent incisors and cuspids to erupt without contact seems to be corroborated by clinical experience. The features of children who have deficient or no growth spaces are prematurely aged. The artificial opening of those spaces between the temporary teeth, through the bodily lateral movement of temporary teeth and permanent teeth beneath them, brings a far more youthful expression to those same features. This treatment often *opens the medium suture* and thereby *increases the area of the nasal passages, providing better oxygenation,* and thus *aiding a better development* of the entire system.

There is possibly no ideal arch, but if there is, that of Bonwill based upon the equilateral four-inch triangle seems to offer the best guide as to what to expect. In his calculation of the circle there is an error in laying off the radius and then laying off the individual teeth, making arcs and resulting in the distal position of the cuspid not coinciding with the

theoretical position claimed. Associating this apparent error with the theory of sufficient growth spaces there has arisen the thought that possibly the one might be the explanation of the other; the theoretical arc (F-D) being greater than the sum of the applied arcs (F-C), and the growth spaces greater than the width of the teeth erupting (Fig. 18).

A final evidence of early dental deformity is in the difficult teething of infants. This difficult teething may be taken as one of the first diagnostic signs of dental malpositions of both permanent and temporary teeth.

Discussion of Paper by Dr. Varney Barnes

Dr. Wilber M. Dailey, Dr. Barnes has given us a paper that will be food for thought for years to come. It has required the observation of years, on the part of Dr. Barnes, to arrive at these deductions, and it will take considerable time on the part of the dental practitioners to prove and make these statements facts.

The simplest process at times is the most difficult to explain in a manner to be thoroughly understood by your audience; but Dr. Barnes has excellently portrayed, in few words, the jaw development; the position and manner in which the tooth erupts.

Dr. Barnes, in speaking of eruption, states that by knowing the ideal you will know how to assist the development of the bone at the age which Nature intended the development, and advises us not to wait until the normal developmental period has passed, and then expect normal development in the cancellous bone.

I have had failures in orthodontia, but have recognized the deficiency and the short-comings and have tried to ascertain the cause; and I agree with the essayist that the only correct manner to treat these cases is from the standpoint of etiology of early development. By turning to the normal, therefore, you are able, by means of an artificial stimulus, to develop, as nearly as possible, the ideal.

Dr. Barnes has spoken of eruption tables, and I would like to suggest here that the members of this society tabulate the eruption of the deciduous and permanent teeth, and if the men of other societies would cooperate in this, we would then have sufficient data to arrive at the average time of exfoliation of deciduous teeth and eruption of permanent teeth, instead of using those tables which have been handed down for fifty or a hundred years. And, further, if we would preserve the deciduous teeth as they are removed, and take the measurements of them, and also of their successors, the permanent teeth, then the accumulated data would give us charts or tables of scientific value.

The statements in Dr. Mosher's paper regarding the lateral development of the premaxillary bones are borne out clearly by the cases at five and nine years, shown by Dr. Barnes. The lateral development can be definitely appreciated.

The developmental process is not well understood, and it would be of great advantage if we would submit models of arches that are developing normally; such a collection would give us sufficient data to arrive at the scientific prognosis in cases of non-development.

The statement that Dr. Barnes attributed to me (that malocclusion of the deciduous teeth exists in the same proportion as the permanent teeth) is not to be understood as meaning the relative positions of the teeth only, but that the lack of development in the deciduous arch is a malocclusion in the sense that the spacing so necessary between the teeth to insure sufficient room for the permanent teeth is absent.

The process of development is apt to confuse one, for between the ages of five and six years the distance or development between the premaxillary bones and the sixth-year molar seems to have been retarded, but about the ninth year develops very rapidly.

I understand that the apical arch which Dr. Barnes mentioned means an imaginary line around the apices of the teeth, expressing the proper normal bone development at that point.

In the ITEMS OF INTEREST for September and October Dr. J. Bethune Stein presented a paper calling attention to bone structures, in which he does not mention "alveolar process" at all. It is all *bone* of the mandible and maxilla. He says he has never found, in his research work, a line of demarcation between alevolar process and true bone; that it is all one.

Dr. E. H. Bogue.

Dr. Barnes is correct about the deficiency in the periods of eruption as published, because they are incorrect.

Dr. Barnes showed a model of a three-year-old patient, and stated, as I understood him, that between the taking of that model and the present time there had been no lateral development. That is a point of importance. I think he is correct, and I could duplicate such models as that, because wherever we find irregularities of the upper teeth I think we usually find the tongue has failed to do its lateral work. He showed us the spaces adjoining the temporary teeth which he believes to be indications of the positions of the permanent ones underneath. He spoke of them as deformities, although I hardly think he meant them as deformities, but rather as indications of conditions that were leading to deformity. He also said the wedging process is absurd, for the greater incline is lingually, and, therefore, the teeth tend to erupt labially. There is an

exception to that: Dr. Barnes took it into account. The upper permanent incisors may tend to erupt labially, but they are restricted by the circle of the temporary roots, behind which they lie, and if those temporary roots do not get out of the way they will deflect the permanent teeth lingually as they erupt.

He speaks of the lateral development of the jaw being complete at four or five years of age. That is an important point for all of us to bear in mind, because the teaching of his paper is that if we find at four or five years of age the development of the temporary teeth is not such as to show us the spaces and the conditions that attend a perfect eruption of the permanent teeth, we should at once begin to enlarge the temporary arches.

The explanation with reference to the temporary arches is a matter of interest, if the permanent teeth are to come through correctly. Dr. Barnes made a little error. I know he did not mean to, in speaking of the "Ainsworth arch" as being designed to bear on the incisor teeth above. Dr. Ainsworth says his arch *may* be used for that purpose, but that is not its primary use.

Dr. Barnes Was that not his first design when he brought it out?

Dr. Bogue. I think it was a feature which he discovered after he first used it. I can not answer exactly.

Another thing which Dr. Barnes implies is that irregular arches of teeth do not enlarge laterally without extraneous help: neither the temporary nor the permanent. He speaks of the "eruptive forces." I have not heard, in this paper, that eruptive force pointed out. I think it has been more accurately studied by Dr. Wright, of Boston, than any one I know. The eruptive force is the pulsation of the heart. Dr. Barnes also says no distal movement of the teeth is normal, and that our problem is rather to guide into a proper eruption, wherein I think he is entirely right.

So far as I can see, Dr. Barnes's paper is but the beginning of investigations which may show us how we may guide the very young child so that it will not have need for orthodontic services later on, and among those influences to be used it is our province to suggest the advantages of hard foods and the use of the jaws at the earliest age, and to work along with the medical men, who generally direct the feeding of the child at the time of weaning, each helping the other to keep the child in hygienic condition.

Dr. Danforth. In relation to Dr. Barnes's theory that by enlarging the temporary arches to normal the teeth will erupt more perfectly, that accentuates Dr. Mosher's

ideas; if in producing these spaces you will stimulate the eruption of the teeth and the development of the premaxillary bones, you might at the same time prevent the deflection of the nasal septum, which may be due to the lack of eruption of these teeth. These theories are of importance with relation to the proper development of the nasal septum, therefore, as well as to the normal occlusion of the teeth.

Dr. Hawley. Finally, our correction will come back, not to the treatment of deciduous teeth by appliances, but to the use of proper foods and the development of the child normally. If we could produce that result by selection of food, etc., we would accomplish something for the human race.

Dr. Danforth. If we could see the children forty generations back we will have to do as Dr. Barnes does with the proper feeding.

Dr. Pullen. I want to commend Dr. Barnes's paper. It has been no surprise to me that he, Dr. Barnes, has so completely elaborated the subject during the last three or four months, and he deserves much credit for his hard labor. The essay presents proof that the work the orthodontist is doing to-day is the artificial development of the dental, alveolar and maxillary arches, as contrasted with what has been styled "straightening crooked or irregular teeth."

Dr. Barnes. What I have presented has been the best that I could do in a new field. While all that has been brought forward may not seem plausible to you, still I ask that you begin to investigate, and then, in time, we may get at the truth. The one particular case shown may not be normal, but, in the absence of evidence to the contrary, I believe it is. Get casts a year apart, as I am doing in many cases, and I believe that in five years we shall have evidence of eruptions and development that will be indisputable. We can not obtain skulls of normal infants. I have yet to see what I consider a normal skull having a normal temporary dentition. Dr. Cryer says he has them, and although he knows more anatomy than I do, in the light of the evidence presented to-day, I doubt it.

The study of development incident to eruption of the teeth will be continued, but it is too great a field for one man. We have to face the evidence of anatomists—and their evidence is indefinite, for it is based more upon the abnormal than the normal in skull development.

I thank you for your consideration and attention, and again ask for your study of this subject.

Treatment of the Displacement of the Inferior Maxilla, Caused by the Partial Resection of the Body of the Bone.

By Dr. Jose J. Rojo, Professor of Orthodontia and of Dental Prothesis in the Mexican National Dental School, Member of the International Dental Federation, etc.

Reported to American Society of Orthodontists, Washington, 1908.

F. C., fifty-five years of age, of a healthy constitution and good antecedents, affected with osteomyelitis of the inferior maxilla in the region of the left molar, was treated surgically at the General Hospital, first by Dr. Leopoldo Castro, and then again by Dr. Regino González, the eminent surgeon.

Clinical History.

The disease of this patient began with the extraction of the second left molar, which was affected with a severe alveolar abscess; the extraction was made with an application of chlorid of ethyl. I believe I have observed auto-infection of maxillary bones in several cases following upon the application of chlorid of ethyl, and it occurs to me that owing to the intense chilling there are mechanical movements of the blood, pus, etc., of the anesthetized region, which facilitate the absorption of infecting liquids; for this reason I never apply chlorid of ethyl for the extraction of abscessed teeth, and strongly recommend that it should not be used in such cases.

The very evening of the day on which the molar was extracted the patient had fever; the fever continued the following day, and the inflammation and pains increased in a very marked degree. Two days later he entered the hospital, and an extra-buccal operation was performed upon him for the resection of a portion of the maxilla, in the region where the molar had been extracted, extending from the second bicuspid to the angle of the body of the bone. Before the incision of the first operation had completely cicatrized, and after having waited the necessary length of time, he underwent a second operation of major surgery, which was very successful, several fragments of diseased bone having been removed. Two months later, when the intra-and extra-buccal incisions were completely cicatrized, the patient was brought to me, through the kind courtesy of the eminent surgeon, Dr. González, to have his teeth examined. After an examination of his mouth, the necessary cleansing operations and preparatory treatments were effected, and it was decided to correct the malocclusion.

Fig. 1 shows the marked deformity of the antero-inferior part of the face, due to the displacement of the teeth. The mentum is twisted toward the side operated upon, the lower lip is depressed and folded, which, by the effect of contrast, make the upper teeth appear to be protruding. It should also be observed that the left cheek is very prominent owing to the relaxation of the muscular insertions, which, in a most marked degree, contributes toward the deformation of the physiognomy.

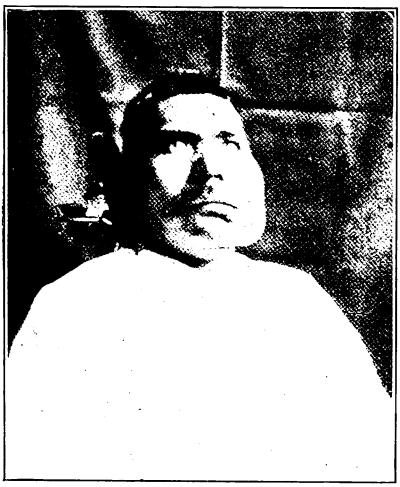


FIG. 1.

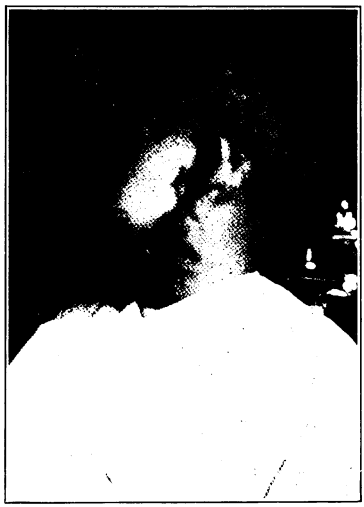


FIG. 2.

Fig. 2 shows the enormous scar which commences in the parotid region, and, following the contour of the lower border of the body of the bone, ends at the symphysis of the mentum. This incision is the principal cause of the enlargement observed in Fig. 1 on the operated side, and it has been observed in various patients that owing to the vitality of the essentially vascular tissues, these, of their own accord, contract or distend, as may be required; it has also been observed that these deformities (enlargements), of their own accord or aided by massage, reduce until they become almost imperceptible.

Fig. 3 shows the displacement of the teeth, there being a space of two centimeters between the lingual surface of the upper cuspid and the buccal surface of the corresponding lower tooth. This photograph sug-

gests the difficulty, and perhaps the utter impossibility of proper mastication.*

It is to be feared in these cases that, owing to the abnormal state of the region, either because the dental arches are subjected to the pressure of oblique forces during mastication (that is to say, the upper teeth in a linguo-buccal direction and the lower ones in a bucco-lingual direction), or to disuse at certain points, the conditions get worse day by day, bring-

FIG. 3.

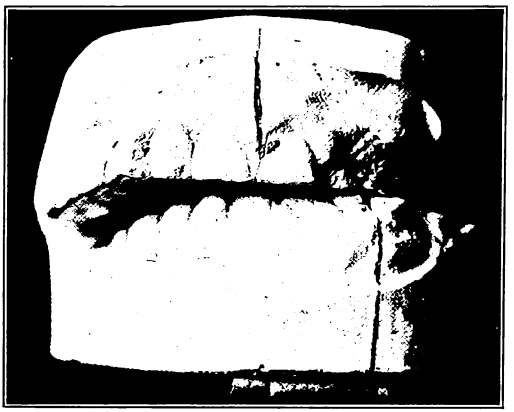


FIG. 4.

ing on caries or displacements of the natural teeth which were saved in the surgical operation.

On the other hand, it might be supposed that dental prothesis could aid these patients. However, to avoid entering upon a general study of the subject, let us consider this concrete case, and we shall observe that a system of artificial teeth set in a plate would not give good results, and that a system of bridgework, besides all the trouble it would give the patient, could not be employed with success; that is to say, they could not permanently restore the masticating functions without either causing

*I would consider it useless or out of place to deal with physiological or psychological questions at any length in this paper, but as these two branches of science are of such great importance in these cases, I wish my readers to bear in mind how essential proper mastication is, and how important it is that a human being should not feel that he is deformed and an object of derision among his fellow-men.

him considerable inconvenience or threatening future complications. It is also evident that the facial deformity would not be helped in the least by either of these two systems.

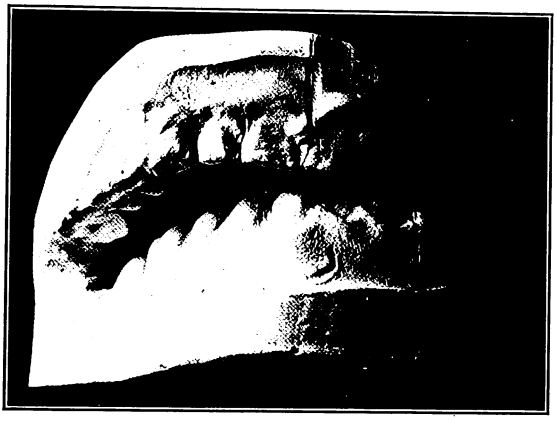


FIG. 5.

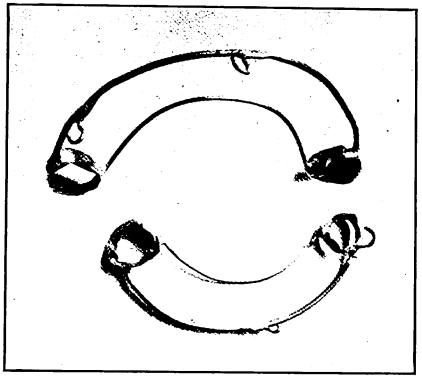


FIG. 6.

Figs. 4 and 5 are photographs taken from a plaster cast, the impression of which was taken in composition simply to study the bite. In these can be observed the deviation of the median line with considerable accuracy, being approximately two centimeters, and also the retroversion of the mandible, of about the same extent. These two irregularities render mastication impossible, give the voice a defective timbre, and disfigure the physiognomy in a marked degree.

These photographs also show how good and serviceable were the teeth which were saved, and how well they could be properly utilized.

Treatment.

Fig. 6 is a photograph of the regulating appliance, contrived after the principles of the Angle School. The metal used in its construction is German silver, its different parts being joined with silver solder (two parts of silver, one of brass). Both the upper and the lower parts each consist of two bands, adjusted upon the first bicuspids, to which are attached two 16-gauge wires (American gauge), which surround the anterior teeth, generally touching the most prominent points of the buccal and

FIG. 7.

FIG. 8.

lingual surfaces. It must be remembered, in placing these, that they have two purposes: First, to equally distribute, among a greater or lesser number of teeth, the force which is necessary to reduce the displacement of the bone, taking into consideration the extent of the necessary movement, the muscular resistance and that of the ligaments, the state of the teeth, etc. It will be observed in the present case that in each of the pieces the force is distributed among eight teeth. Secondly, to secure an anchorage for the ligatures which are to effect the movement. The exterior wire arch of the upper piece is near the neck of the teeth, and it has two hooks, bent in a downward direction, their openings being on the side opposite the region operated upon; one of them is at the median line and the other is near the bicuspid. These hooks are placed on a level with the cutting-edge of the teeth to prevent the elastic ligature which they are to support from acting in such a way as to move the particular tooth with which it would come in contact if its extremity were fixed to the wire which is near the neck of the teeth. In other cases the hooks have been omitted, the wire being placed near the cutting-edge and the

ligatures fixed directly to it without using an intervening hook. The interior or lingual wire of the upper part of the appliance may be left out, though it greatly strengthens the bands.

The buccal arch of the lower appliance is placed at a distance of one millimeter above the neck of the teeth; it is not absolutely necessary that it be closely fitted to the teeth. It has two wire hooks, opening toward the side operated upon and bent toward the cutting-edge, which support the traction ligatures. The lingual arch should touch the teeth at a proper point so as to prevent it from slipping out of place, owing to the peculiar contour of the labial surface of the teeth. The principal object

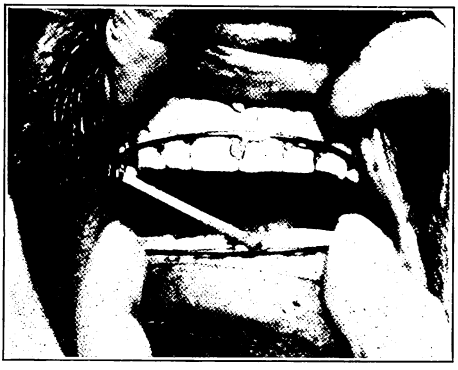


FIG. 9.

of this wire is to distribute the traction force over the teeth which it touches.

To adjust and solder these wires, as well as the hooks, it is necessary to place the bands, already soldered, in their proper positions and take an impression. When the latter and the bands have been removed from the mouth and placed in the impression, this is filled and a cast is obtained on which the wire arches can be easily adjusted and soldered by the usual methods. The hooks can be soldered after the wires and bands have been soldered and removed from the plaster cast.

In fixing these appliances in position it is good practice to make the patient wear, for the space of twelve hours, an elastic rubber wedge on the interstitial face of each molar which is to carry a band, so as to separate the teeth and facilitate the placing of the appliances.

After trying the pieces in the mouth, the molars and the bands are cleaned and dried, balls of cotton, alcohol and hot air being used for this purpose. When the parts are dry a little semi-fluid cement is mixed and

applied upon the molars and within the bands, and the latter are placed in position with great care to avoid getting them out of shape.

The appliances should not be set into action until two or three hours after they have been fixed, so as to give the cement time to harden.

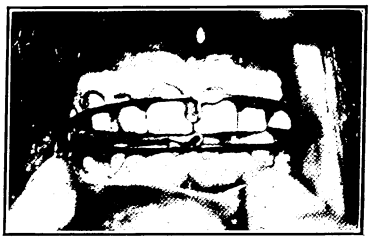


FIG. 10.

Fig. 7 shows how the appliance works, the hooks of the buccal arches being used to fix, by means of silk ligatures, a strip of elastic rubber, or a

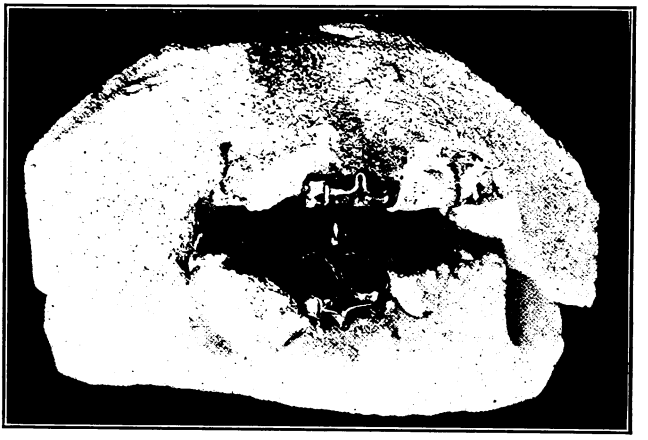


FIG. 11.

circular rubber band, the strip being preferable to the latter because its tension may be increased or reduced when found necessary.

These elastic strips should be renewed every forty-eight hours, and it will be necessary, especially on the first day, to frequently examine the patient (once or twice a day).

The greatest care must be observed as regards the food allowed the patient, the mastication of solids being entirely eliminated; but it must

be remembered that this diet does not last long, for in the majority of these cases the reduction of the bone is effected within a few days.

Extreme cleanliness of the mouth is also of great importance in these cases.

Fig. 8 shows the progress made a few days after the treatment was commenced.

FIG. 12.

Figs. 9 and 10 show that the dental arches are in their normal relations, and that the regulating appliance has accomplished its purpose.

FIG. 13.

Four days after the treatment was commenced it became necessary to extract the second and third upper molars of the side operated upon, because, owing to the reduction of the maxilla, these teeth, which would perhaps never be of any use, lacerated the cicatricial tissues of the mandible.

The complete reduction took about fifteen days. Notwithstanding the fact that as the resection was partial and the periosteum and portions of the bone remained, the reproduction of the bone was very rapid, and

although this is a very good precedent for not making the application of the appliances permanent, still in treating these cases we have to contend with the enormous resistance of the cicatricial bony tissues.

Retention.

Fig. 11 represents the retaining device. In making it, bands of German silver were adjusted on the four bicuspids of the side not operated upon, and after having been soldered they were placed upon the corresponding molars: then the impression and occlusion (bite) were taken in plaster,

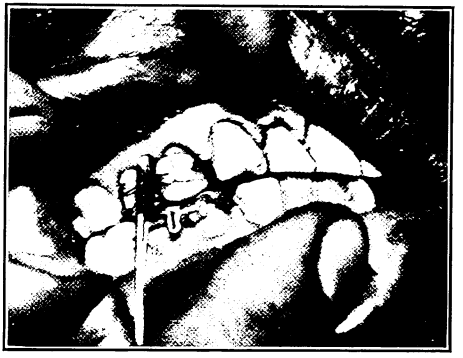


FIG. 14.

as is usually done in making an artificial crown. When the impression was properly prepared, with the bands in their respective positions, an articulating model was made of plaster and sand, which is seen in the photograph, after the same method which is followed in making crowns with cusps and bands.

This cast was used in soldering together the bands of each piece, and for the purpose of fixing projections on them which would oblige the patient to close his mouth in normal occlusion. On the upper piece we observe on the palatine surface a projection about one centimenter in length, which protrudes beyond the surface of occlusion, it starts from between the two bicuspids and goes in a downward direction to meet the lingual surface of the lower piece, its thickness and shape being designed to accomplish the purpose in view. On the buccal surface of the same piece there is seen a piece of wire the extremities of which are fixed to the two crowns, and in its center it is bent so as to form a little hook, opening upward. The two bands, the projection and the exterior hook, are firmly strengthened and joined with silver solder.

The lower piece has a 16-gauge plate of German silver on its lingual surface, embracing the space included between the linguo-occlusal edge

and the neck, and from the mesio-lingual angle of the second pre-molar to the disto-lingual angle of the second pre-molar, its principal object being to receive the projection of the upper piece. On its buccal surface it has a small wire bent in such a way that it both connects and strengthens

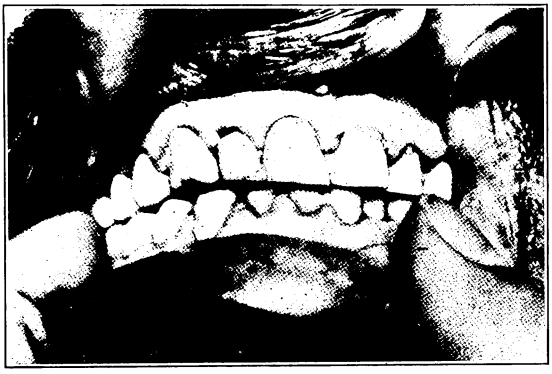


FIG. 15.

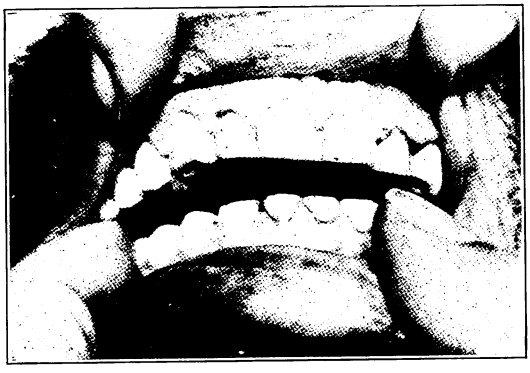


FIG. 15.

the bands, and it also forms a small hook opening toward the gingivo-buccal fold. As in the upper piece, all its parts are solidly joined with silver solder.

Fig. 12 shows the retaining apparatus already trimmed and polished and ready to be cemented upon the respective teeth. These devices should be very strong and well finished, so that, although it may be necessary to wear them a long time, they shall neither break nor have any injurious

effect upon the teeth with which they are in contact; besides, *an alloy of gold and platinum should be given the preference in their construction* to make them as convenient as possible to the patient.

Fig. 13 shows the retaining appliance properly cemented in place, and it can be observed how perfectly it maintains the occlusion. All those

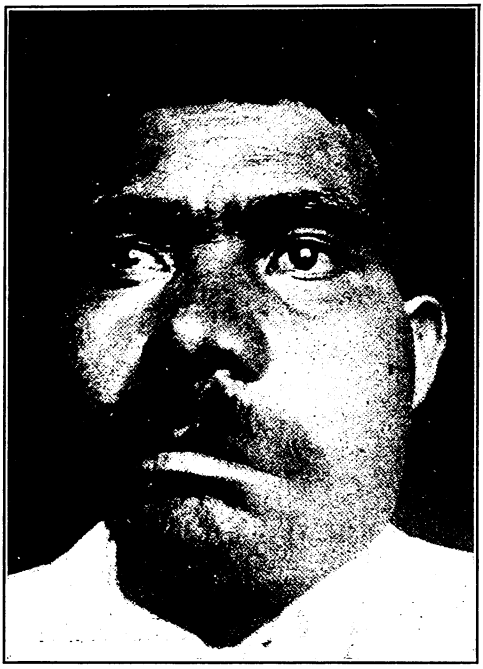


FIG. 17.

who have seen one of these cases must remember how strong the traction is toward the cicatricial region; notwithstanding this, in the present case the teeth, owing to their being so firmly rooted, did not suffer any displacement or accident.

In this photograph is seen the purpose of the small hooks on the buccal surfaces of the appliance. These were put in so that a small elastic rubber band might be strung from one to the other and worn by the patient, especially at night when his will-power can not help him to keep his mouth in its normal relations. To facilitate the placing of this small band it was threaded with a piece of thread, which served the purpose of a kind of handle, as is shown in the illustration.

Fig. 14 shows the retaining apparatus when the mouth is open; the projection on the upper piece is also observed,. with its rounded and polished edges.

After this appliance had been worn for six months, the upper piece broke and became unserviceable, but it was immediately replaced, new bands being used and the prolongation of the broken piece utilized, and having been slightly reinforced and cemented in position, was worn for another nine months, making a total of fifteen months.

Fig. 15 shows the beauty of a perfect occlusion, and if we again examine the first, second and third photographs for a minute we shall observe the change that has been effected; the mastication, enunciation and physiognomy have been entirely restored, benefiting the patient both physically and morally.

Fig. 16 shows the movement of the mouth, it being observable that the teeth deviate slightly from the median line when it is open wide, but as they occlude they return to the position shown in the preceding photograph.

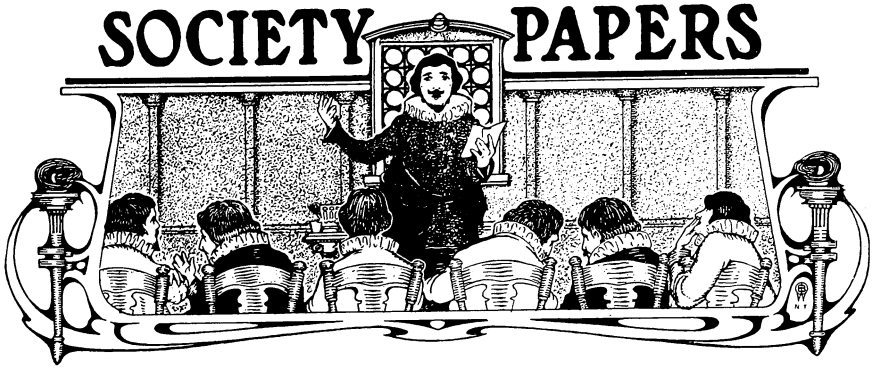
Fig. 17 shows the correction of the median line, and to be able to better appreciate this photograph, compare with Fig. 1, 2, and 3. The enlargement of the cheek on the operated side became considerably reduced.

The patient was examined a year after the retaining appliance had been removed, lack of time preventing the taking of a photograph, but his teeth were in perfect normal occlusion, and his physiognomy symmetrical, especially as he had grown a beard.

In the course of my practice I have treated seven cases similar to this, and although all of them have shown marked peculiarities, I have followed the same principle as in this case, that is to say, the reduction of the displacement, applying the regulating force from the maxilla to the mandible; and retention, making use of the maxilla.

It gives me great satisfaction to be able to state that in recent years some of the most prominent surgeons in our city have not forgotten that the dentist can cooperate with them in cases involving major surgery of the maxillæ. A patent proof of this is that I have a case which was sent to me by Dr. Francisco de P. Bernáldez, dean of the National Dental School and an eminent surgeon, to be treated for a lesion of the mandible before the students of the said school, the result being a complete success which was gratifying to all who observed the case. It is to be hoped that these cooperative relations between physicians and dentists will increase from day to day and benefit suffering humanity.

SOCIETY PAPERS



The Making of Inlays by the Impression Method.

By F. T. VAN WOERT, M.D.S., Brooklyn, N. Y.

Read before the Second District Dental Society, March, 1901.

I wish it understood that this paper is not written in defense of the cemented filling nor to convert the skeptic. It is meant to help, if possible, those who recognize its great value, and I hope to make easier the technique necesary for a successful result. The deductions which follow are based upon a practical, clinical experience of over thirty years.

In the beginning my efforts were directed toward the grinding of porcelains to fit cavities on the labial surfaces of the anterior teeth. I think you will find in the records of this society, somewhere about twenty years ago, several references to my work in this line by Drs. Geran, Pitts, Hill and others. About that time I worked very hard trying to perfect an instrument for grinding porcelain fillings accurately to fit irregular cavities. And it was to the three gentlemen before named that I showed my models and confided my hopes and expectations. Thus, those of you who may feel that I have taken up a new fad, can see that the cemented filling is a very old story with me and I assure you one that has never lost interest.

I have seen within the year a porcelain filling which I inserted between fifteen and sixteen years ago, and am happy to say I found it just as perfect as when it was first inserted. This is but one of many that have stood the test of time, and my greatest regret is that a more practical means of securing such results was not available in the beginning of my professional career. I do not intend, however, to bore you with

a description of the different stages in the evolution of this wonderful method of treatment for the restoration and preservation of diseased teeth.

Previous to the presentation of Dr. Jenkins's porcelain and his method of manipulation, it was a hard struggle and one accompanied be very uncertain results. On the other hand, we have at our command to-day well-tried and scientific methods to assure us of success. It is perfectly natural that this, like all advancements, is to have its opponents and, perhaps, there will be some who will never accept it. I hope not, for their own sakes. I am thoroughly convinced that the cemented filling will supplant most of the others, particularly gold-foil. If this is true it becomes simply a question of selecting from the various methods the one which promises the best results. And if in the selection there is one which minimizes time and fatigue to patient and operator without sacrificing anything to the ultimate result, it is by all means the one to adopt; and it is for the purpose of helping in this selection that the subject of making inlays by the impression method is presented for your consideration this evening. I expect to glean from the discussion which follows much that will assist me in my deductions, and sincerely hope there may be something in the following which will prove a like service to you:

It is about six years since I first adopted the impression method for making inlays or cemented fillings. Prior to that I had felt that the direct method was the more reliable, but a case presented in which I found it impossible to get anything like a perfect matrix. The patient refused to have anything but porcelain, the cavity being a distal approximal in a lower second molar, and, after repeated efforts, all of which were failures, I decided that if the impression method was of anything like the value claimed for it, the time had arrived for me to put it to the test. I placed a temporary filling in the tooth, packed my grip and started for Chicago on that same day. I had read in different journals of the claims made by several gentlemen, and decided that those set forth by Dr. Taggart seemed the most practical, and as a result it was to him that I went in my dilemma. It took him less than fifteen minutes to show me the errors in my efforts with this system on several previous occasions. Since that time I doubt if I have made half a dozen fillings by any other means.

Requisites for Success with the Impression Method.

The essentials necessary for securing an accurate impression of any cavity are: first, suitable trays; second, proper impression material, and, third, a knowledge of its manipulation.

The first requisite, that of trays, I have found can be secured only by making one for each case. I have several forms of those which are for sale at dental depots, but have never been able

to secure a satisfactory result with any of them. First, because there are hardly ever two cases alike, and a tray which will give the best results must have its formation to correspond with all the outer lines of the cavity, overlapping them to a considerable extent, so that when the impression material is forced into place such surplus as exudes from beneath the tray is in a direct right angle from the cavity margin. As an illustration of this I will pass for your inspection a few prepared cavities and impressions which I hope will make this point clear.

The material for trays which has given me the most satisfaction is sheet platinoid of 32, 34 and 36 gauge, because it has a rigidity, together with more pliability than any other metal that I have been able to find. Another very good quality, while not essential, is that it has a finely finished surface, which at least has the appearance of being clean, and is pleasing to the patient. The bending or shaping of these trays is something which is impossible for me to describe on paper, but I will be glad to demonstrate this after the meeting to anyone who cares to see it.

Manipulation of Impression Compound.

The second requisite, the impression material, seems to be a matter of opinion. I have had the pleasure of visiting some of the prominent men in the West and the extreme South within the last month, and find that there are few who agree upon any one make of material, but all agree that one of the forms of so-called modeling compound is the most practical. Personally, I prefer that made by the Detroit Dental Manufacturing Company, because it softens at a lower temperature, sets quicker, and when cold is as hard, if not harder, and gives a very much sharper definition of detail than others which I have tried. It was the faulty manipulation of this material which was the cause of my failures prior to the demonstration which Dr. Taggart gave me at the time of my visit. I had been in the habit of warming it as I would for taking an impression of the mouth, when it should have been prepared with the surface coming in contact with the cavity so soft that it is practically sticky, while that portion connecting with the tray should be quite hard. In other words, the main body of the compound should have enough resistance to force the softer portion into the desired position and retain it until it can be chilled or cooled. This can be accomplished in the following way: After forming the tray, a suitable quantity of compound is heated, the tray held over the flame until it is hot enough for the material to adhere to it, and the compound then pressed into a cone-shaped mass with the fingers, and then chilled. The surface of the cone should be held in a small flame, so that it is quickly heated to the point of running and then forced into position, and either compressed air or cold water used for setting it.

I find it a great advantage in large cavities in molars and bicuspids to force between the tray and adjoining tooth the blade of a thin cement spatula to bring up a sharp line at the cervix. This is easily removed after the chilling and facilitates the removal of the impression as well. This is frequently advantageous in approximal cavities of the anterior teeth also.

Method of Making Amalgam Models.

If we have succeeded in securing an accurate impression, it is only the beginning of a successful ultimate result, and the next procedure, that of making the model, requires as careful consideration and manipulation as any part of the technique. Various materials have been recommended for this purpose, all of which I have given a most careful and impartial trial, and I am forced to the conclusion that there is but one reliable material, and that is a good amalgam. When I say "a good amalgam," I mean one having good edge strength, as little shrinkage as possible and the property of setting quickly, although this is not essential. I use the Standard alloy made after one of Dr. Black's formulas.

First the impression must be imbedded in plaster to a sufficient depth, and with enough body surrounding it to permit of pressing the amalgam well down into the impression. The amalgam is then mixed with enough mercury to make it very plastic, and this is burnished into place with suitable instruments until the impression is filled. Then the excess of mercury can be eliminated by folding a piece of rubber dam several times, and placing it on the amalgam and pressing upon it with the thumb.

The mixing of the amalgam is one of the most important points in the procedure. In my early efforts I tried to fill these impressions as I would a cavity in a tooth, and the force required in burnishing it to place invariably marred the impression which resulted in an imperfect model of the cavity.

Advantages of Impression Method.

If we succeed in getting an accurate model, a filling made to fit it must fit the cavity which it represents. This being the case, let us consider the advantages to be derived from the impression method. First, we are none of us so perfect in any branch of our art that we are not liable to make mistakes. Second, it is beyond question that we all have many accidents that are just as deplorable as the mistakes we might make, and when such happens in the direct method of making inlays we are obliged to acquaint our patients with the fact that we have erred, or met with a misfortune in the form of an accident, either of which is humiliating to the operator and frequently exasperat-

ing to the patient, and, occasionally, to such an extent that the patient looses confidence and seeks services elsewhere.

We will take, for example, porcelain restorations. In the direct method, where the matrix is burnished to the cavity, which, by the way, is a very much more tedious operation than that of taking an impression, we have confronting us the possibility of some distortion in its removal, or, perhaps, in the handling after it has been successfully removed, as well as the possibility of warping in the fusing of the porcelain itself. There is still further the difficulty which arises in many cases of securing a suitable color, or just the proper form of contour, all of which is a large combination of defects which remains to be explained to the patient.

The impression method eliminates all of these difficulties. In the first place, the matrix is secured by swedging the gold into the die with the Brewster press, and the swedged matrix is less likely to change its shape when removed, than the burnished one. The shape of the swedged matrix can be retained by filling it with a hard wax; it is then removed and invested, and later the wax washed out. Should the filling prove a failure, another, or several others, if necessary, can be made without the patient's knowledge, and where the question of color or contour is liable to cause trouble, several fillings, varying from a light to a dark shade, can be made; or, if it be a troublesome contour, several of different shapes, so that when the patient presents the suitable filling can be selected without subjecting him to another or several operations and without the unnecessary loss of time to the operator.

Cast-Gold Fillings.

The same procedure is applicable with cast-gold inlays, with the exception that the wax filling is fitted to the tooth, as described by Dr. Taggart, omitting the final carving of detail in bite and contour which should be done to the die. If the die is correct the wax filling will go to place without difficulty, but one is surprised to note the little defects in the filling, such as here and there a small point where the wax has not conformed to the sharp edge of the cavity margin. This is due to the lack of resistance at such places, the wax being of one temperature throughout its entire body it is forced by the occlusion from inward out, and on a line with the cavity margin. It may be said that this defect can be remedied by running a hot spatula around the line, but I have found this extremely difficult, particularly at the cervix. It is also claimed that such defects may be corrected by burnishing the gold casting after it has been cemented to place. This has proven just as difficult and unreliable in my hands. And it is a potent point that these difficulties do not exist when cast fillings are made from the impression and amalgam model properly constructed.

It is a fact that many eminently satisfactory results are obtained from the direct method, but that it is less reliable in the hands of the average practitioner is also true. There are many things not strictly related to either method, which play a large part in the success or failure of these operations, and which are liable to be charged against either of them, such as imperfect cavity preparation; faulty occlusion; defective fusing of porcelain; or the careless casting of gold, any one of which would destroy the most perfect work in either of the methods mentioned.

The advantages of the impression method, as I see them, I hope have been set forth clearly, and if there is any one present who can point out a better or more reliable way I am open to conviction and shall be more than gratified.

In conclusion, I want to reiterate the statement made in the beginning of this paper, that the cemented filling will supplant most of the others, particularly gold-foil.

The Rational Consideration of Pyorrhea Alveolaris and Its Treatment.

By R. G. Hutchinson, Jr., D.D.S., New York.

Read before the Central Dental Association of Northern New Jersey, May, 1909.

My reason for choosing the above title is that the conclusions arrived at have been reached by careful consideration of results obtained by me clinically during a period of from fifteen to twenty years of practice.

In the beginning it did not occur to me that I was treating pyorrhea. In common with the great majority, I had been led to believe that its origin was veiled in obscurity, and that treatment of the disease would be but a waste of time and effort. This opinion still seems to prevail even among many of our leading practitioners.

There existed in the mouths of many of my patients a most deplorable and unhygienic condition, which was obviously undesirable, and which I considered it my duty, as the one in whose care the welfare of their mouths had been placed, to correct. This could be accomplished only in one way, and that was by removing all that was foreign and detrimental to the welfare of the oral cavity. At first, and, in fact, for many years, this was a disagreeable and arduous task, never profitable from the financial standpoint, but one which I believe to be the duty of every man to perform for his patients. The results obtained by the cleaning of the

teeth compelled the belief that I was unwittingly treating, and in many cases curing, pyorrhea. This was most encouraging, and led to greater efforts, with constantly increasing success.

Unfortunately for the public, and also for the reputation of our profession as dental surgeons, it is only too common for the family dentist to ignore pathological conditions and give his sole attention to merely repairing or replacing damaged teeth. How much more important is it to attend first to the establishment of health in the mouth, and then restore teeth which have been damaged. Better still is the practice of preventive treatment by oral prophylaxis. Such service is of vastly greater value to the patient, and is worthy of greater remuneration to the man who renders it. In the great majority of cases pyorrhea is unnecessary and preventable. Thorough prophylactic treatment makes pyorrhea alveolaris practically impossible.

Before stating my views in regard to pyorrhea and its treatment, I wish to say that what I refer to is that condition of the tissues surrounding the teeth, which the majority of men regard as pyorrhea, and which they consider incurable. How often we hear patients say, "Dr. Blank says I have Riggs' disease, and that nothing can be done to save my teeth."

Pyorrhea Alveolaris Curable.

I do not claim one hundred per cent. of success in saving such teeth, but the percentage of failures is very low. If one man succeeds once in accomplishing the desired object, it proves that it can be done, and a thousand failures can not alter the fact. If people died only from incurable diseases, how many deaths would there be? To pronounce a disease incurable because the treatment is not infallible would be folly. If a disease can sometimes be cured, it is curable. Pyorrhea is curable.

It is so easy to shirk responsibility for the treatment of a condition by saying that it is incurable, that I am afraid many will continue to consider it so. Most men follow the line of least resistance.

Pyorrhea a Local Disease.

Do not think that I would imply that such is the motive of all who hold this opinion. There are many who honestly believe that by treating pyorrhea locally we are only abating a local condition, which is the expression of a constitutional disorder, and they say, therefore, that we have not cured the disease.

As long as the profession is taught to believe that pyorrhea alveolaris is of constitutional origin, just so long will the majority continue to neglect its treatment, allowing millions of teeth to be lost and thousands of people to suffer from its systemic effects.

Some believe that pyorrhea is incurable and constitutional because they have failed to establish a cure by local treatment. Others are predisposed to the belief that the truth can be known only through the medium of the microscope, and that conclusions arrived at by clinical study are unscientific, and, therefore, unreliable.

Cicero says, "No one sees what is before his feet; we all gaze at the stars." Are we not gazing at the stars when we overlook a condition which is so obvious in the mouth, and by aid of the microscope try to determine exactly what variety of bacteria are present in the discharge from pyorrhea pockets; and then try to find some indirect way of reaching those bacteria that lie at our very feet? Gentlemen, is this rational?

Clinical Symptoms of Pyorrhea.

Let us now consider the condition which is universally regarded as pyorrhea alveolaris. We find usually a highly congested condition of the soft tissues surrounding the teeth, accompanied by more or less pus exuding from the alveolus, deposits of serumal calculus, loss of both hard and soft tissues, and all the symptoms common to an infected wound. Add to this quantities of food débris, necrotic tissue and the products of bacteria. Is it any wonder that destruction of tissues continues and that constitutional disorder exists? You will say that this exaggerated condition did not always exist. Of course not. It has taken years to reach this stage, but what probably was the initial cause? Undoubtedly all pyorrhea is caused primarily by an injury either mechanical or chemical (through fermentation of food débris) or both. It is well known that fermentation takes place in the mouth, and it is also well known that there are many crowns, bridges and bulging fillings injuring the tissues against which they impinge. Excessive pressure due to malocclusion, faulty bridgework, clasps on plates, may very easily so injure the peridental membrane as to cause pyorrhea. These are only a few of the conditions which are a common cause of injury in the mouth, both by the pressure maintained, and because of the retention of food débris. When the tissues are injured they are less resistant to bacterial action, regardless of the general systemic resistance, and are an easy prey to infection. Some may say, "But pyorrhea exists frequently in mouths that have no such conditions, and which are kept clean." That may be true at the time when the pyorrhea has developed, but I believe that at some previous period such extreme care was not exercised, and that the primary stage was established during that period. In many individuals, fermentation at the gingival margin produces inflammation, and that, in turn, results in the formation of serumal deposits, which increase the

irritation, until finally suppuration occurs and fully developed pyorrhea exists. Some persons are less resistant than others to any form of infection, but that is not proof that the condition resulting is of constitutional origin.

Certain constitutional conditions may or may not be present in conjunction with pyorrhea, but are not necessary to its existence, neither is their cure when present a necessary factor in the treatment and cure of pyorrhea, except in such cases as would preclude the possibility of healing any surgical wound.

We know that under some conditions it is impossible to cure an alveolar abscess except by extraction, and sometimes it is necessary to thoroughly curette the alveolus before a healthy condition can be brought about, but do we call it a constitutional condition? It is exactly similar to pyorrhea, except that in the case of the alveolar abscess the infection travels through the apical foramen, instead of by way of the socket from the gingival margin. In both cases the removal of the infected tissue effects a cure. The question is not, Can pyorrhea be cured? but, Can all teeth so affected be saved, or have some reached a stage where the establishment of health necessitates the removal of the tooth?

Extraction invariably effects a cure. If this is so, how can it be constitutional? Also, if we can cure a number of pockets by instrumentation, and fail in our efforts on another in the same mouth, how can such a case be constitutional?

Rationale of Treatment.

If we remove what is causing an injury to the tissures, leaving what Nature will tolerate, we effect a restoration to health, and that is what Webster defines as a cure. Nature is endeavoring to exfoliate calcareous deposits and necrotic tissue, and can not do so without exfoliating the tooth to which they are attached. We merely come to the rescue, and by surgical interference separate the one from the other when possible, or hasten the removal of both by extraction. The condition may be compared with one in which the hand is so seriously injured that amputation of one or more of the fingers is necessary, together with the removal of other tissue, in order to prevent progressive necrosis and gangrene and to restore health to the member.

The great majority of teeth which demand extraction are those containing septic pulps which have so saturated the teeth that they can not be disinfected. The retention of such teeth is a crime, and frequently results in serious necrotic conditions. I have recently had under treatment two cases in which empyema of the antrum resulted from a neglected pyorrhea.

We have heard much recently concerning the treatment of pyorrhea by bacterial vaccines. This proposition is a delusion and a snare. It merely treats a symptom in the same manner that the administration of an antipyretic does in case of a toxic fever, and destroys one index to the complete removal of the cause, by masking the symptoms of inflammation. If the bacteria which we wish to destroy exist in the blood channels only, there is reason for combating them in this manner, but where the source of infection is accessible, as is the case in this condition, I believe it to be not only unnecessary, but unjustifiable to resort to such treatment. We should remove the cause, which exists in the mouth, and Nature will respond with wonderful alacrity.

No method of constitutional treatment has ever been, or ever will be found that will avail without surgical treatment, and we know that we can and do cure pyorrhea by surgical treatment alone.

Constitutional Diseases Results of Pyorrhea.

The great majority of men fail to recognize pyorrhea until the condition has become so aggravated that some of the affected teeth must be extracted in order to effect a cure. It is this failure to save such teeth, and to successfully treat others, which leads many to believe that the pyorrhea is caused by constitutional conditions which unquestionably are existent at the time.

When we take into consideration the fact that it has required from ten to twenty years in most cases to establish a well-developed general pyorrhea, and that during a greater part of that time necrotic tissue, with its accompanying formation of toxins and purulent discharges, has been in the mouth, and that these products have entered the system through absorption and ingestion, is it not reasonable to believe that the constitutional conditions, which are coexistant, are the result and not the cause of pyorrhea?

How many cases in the first stage have exhibited constitutional symptoms? Is it not invariably the advanced cases that are investigated to determine the opsonic index?

Many men are successfully treating simple cases of pyorrhea, and some are curing those which have been considered hopeless by the majority, and *always* by surgical treatment, whether accompanied by other treatment or not, but *never* by other means alone.

It is a significant fact that Dr. Riggs, whose name will always be inseparably connected with this condition, cured it by surgical means with the crude instruments at his disposal. That was some fifty years ago.

Such men as Dr. J. W. Younger, of Paris; Dr. Robert Good and Dr. Sidney McCallin, of Chicago; Dr. D. D. Smith, of Philadelphia; Dr. Hector Griswold, of New York, and many others, have for years been

adhering to the belief that pyorrhea is a local disease, and their opinions are based on the successful results obtained by them. I do not care what opinions are held by men who judge by their failures. Just so long as I am successful, I shall continue to believe in the means by which success is accomplished. Those men who have been successful in their treatment are the ones who have treated locally and believe it to be a local disease.

It is manifestly unfair to judge of the merits of any treatment by the failures of men who do not claim to be able to effect a cure. Let us compare the results of those who claim constitutional origin with those obtained by the adherents of the local hypothesis.

Far more important than trying to discover a hidden cause is the consideration of systemic results of pyorrhea. There is plenty of evidence to support the belief that many disturbances, such as gastric and intestinal disorders, appendicitis, nephritis, endocarditis, abscesses in different organs and glandular tissue, carbuncles, etc., may be the direct results of pyorrhea.

It is surprising how seldom members of our profession, and also of the medical profession, take into consideration pathological conditions of the mouth in connection with constitutional disorders. I have had many cases referred to me by members of the medical profession, and in every case the desired object has been accomplished by restoring the mouth to a healthy condition.

In connection with this phase of the subject, I wish to call attention to an article by Stephen E. Tracy, M.D., in the March number of the *Dental Digest*, entitled "The Importance of Thorough Dentistry and of Disinfection of the Mouth, from the Viewpoint of the Abdominal Surgeon." Quoting Sir Edward Treves, Dr. Tracy says: "If people were a little more careful about their teeth they would not need to be so careful about their diet." Dr. Tracy continues: "Who could wish for a more rational explanation of a gastric or gastro-intestinal disturbance than a constant infection from a purulent mouth?"

Dr. Paul G. White, of Boston, states: "The great sanitary reform of the world is not the abolition of the village closet, but it lies in the herculean task of revolutionizing the unsanitary and infectious condition of the human mouth."

Again, Dr. Tracy says: "A patient whose mouth is in the condition already described will absorb a certain amount of toxins which will lessen the resistance of the tissues, change the chemical composition of the blood, have a vicious influence on all the organs, and will predispose the subject to many diseases. If a patient in such a condition be given an anesthetic, after the operation the emunctories will be called upon to eliminate not only the anesthetic, but also the toxins which have accumu-

lated within the body. At this time the kidneys are the chief organs of elimination. If the amount of toxins passing through the kidneys be sufficient to cause an acute nephritis with diminished functional activity, the patient may succumb from renal insufficiency."

"In cases of marked infection of the mouth I always fear a post-operative pneumonia, a pleurisy or an edema of the lungs."

The entire article is so valuable that I would urge you all to read it through.

It was my intention to cite several of my cases that have been treated successfully, some in spite of constitutional conditions generally believed to be causes of pyorrhea, in which there has been no recurrence, although the constitutional conditions continue to exist. I will mention only one, as I do not wish to occupy too much time.

Clinical Experience.

About a year ago Mr. D. was referred to me for treatment of pyorrhea by a fellow dentist. All of his teeth were extremely loose, the gums highly congested, pus discharging profusely, and a very considerable proportion of the alveolar process absorbed. A partial lower denture was worn and the upper incisors replaced by bridgework attached to the cuspids by full gold crowns. The lower incisors were so loose that they had to be supported by ligation. There was in addition to extensive serumal deposits a great deal of salivary calculus anteriorly.

The usual surgical treatment was given, and the pyorrhea cured. After an interval of about three months, there was a recurrence af salivary calculus and a gingivitis, but no pus. This was due to failure on the part of the patient to properly carry out instructions as to the care of the mouth.

Again, after an interval of about the same time there was a similar condition, but less pronounced. By this time the patient began to believe that it was worth while for him to do his part. About one week ago I saw him, after six months had elapsed, and there was not even a trace of calculus of any kind, and the gums were in a very healthy condition.

Now, that is not at all unusual or strange, but what is significant is the fact that during the interval he has had removed from the kidney a calcic formation as large as a hickory nut, showing the existence of a constitutional lesion commonly considered to be a cause of pyorrhea, and one which makes a cure impossible, and a so-called recurrence inevitable.

Diagnosis of Treatment.

It is impossible at this time, and would do little good to describe in detail the technique of the operation for the cure of pyorrhea.

Correct diagnosis of the particular factors

causing the disease in each individual case is of prime importance. A most thorough examination of each tooth should be made; calcic deposits, necrotic tissue, and all toxic material must be thoroughly and delicately removed without undue injury to healthy tissue, the pockets washed out, teeth polished, and *the mouth kept clean.*

The same kind of treatment, varying in degree, applies to all stages, from a simple gingivitis to the suppurative stage. We are treating pyorrhea by prevention as well as by cure.

If the condition which caused the initial pyorrhea is allowed to recur, we will have a recurrent pyorrhea. If we maintain hygienic conditions there will be no recurrence, except where an injury to the tissues may occur. In short, whatever causes it once may cause it again, and this also proves its local origin.

Many confuse the term recurrence with continuance. Recurrence implies a discontinuance. We may have recurrent symptoms of a continuous condition, but can not have a recurrent condition, unless a previous cure has been effected. A cure does not guarantee immunity, and a true recurrence in no way invalidates a cure. If proper care is given mouths which have been properly treated, the general tone of the tissues will continue to improve, and the mouth will become more healthy as time advances.

Nature must have time to repair damaged tissues.

This is no theory, but is supported by a great many cases which I have treated, some of which have been seen by other men. Frequently, even when the care of the mouth is neglcted subsequent to operation, there is no recurrence of the pyorrhea.

In an article in the May number of the *Dental Brief,* Dr. Robert Good, of Chicago, says: "Usually there are two reasons for a dentist thinking that pyorrhea can not be cured.

"First, he has been told at college that it is incurable, and, if after graduating, he has had the courage to try it, and made a failure, of course, that settles it for all time. He makes the mistake of judging the *ability* of every dentist by his *inability.*

"One more reason very often given for not making an attempt to cure pyorrhea is: 'I can not get my patients to pay for it. This is an exploded theory.' "

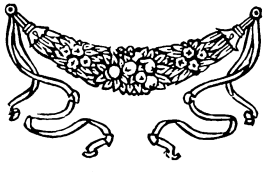
Pyorrhea alveolaris is mysterious only when we make it so. When we look at it from the common-sense surgical standpoint it is simple enough to understand, but the operation is most difficult to perform, and involves long and arduous training. The cure can never be accomplished

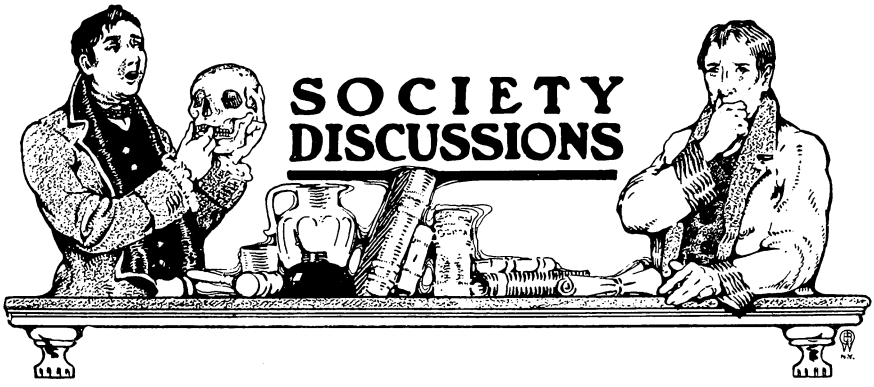
by the majority of practitioners, as it requires so much time and energy to acquire the requisite knowledge and ability, that few men will care to follow it up.

There is no short and easy way, and that is what the profession seems to be looking for.

In closing, let me state that my object in presenting the subject is that I believe this position to be a correct view of the true situation as it actually exists, and that if accepted and followed it will lead to the successful treatment of a condition which affects probably seventy-five per cent. of the adult population and causes untold suffering.

If it can be *demonstrated* that better results can be acomplished by other methods of treatment or through other hypothesis, I will be among the first to acknowledge my error, but thus far, what has been gained by the men who cling to the theory of constitutional origin? They have proved nothing, nor have they given anything to the profession which has enabled us to successfully combat the disease, but, on the contrary, have discouraged many from doing as much good as they might have done had they not considered the situation hopeless.





Second District Dental Society.

March Meeting.

A regular meeting of the Second District Dental Society of the State of New York was held on Monday evening, March 8, 1909, at the Kings County Medical Library Building, No. 1313 Bedford Avenue, Brooklyn.

The president, Dr. Hillyer, occupied the chair and called the meeting to order.

The secretary read the minutes of the last meeting, which were approved.

The paper of the evening was ready by Dr. F. T. Van Woert, his subject being "The Making of Inlays by the Impression Method."

Discussion on Dr. Van Woert's Paper.

Dr. J. A. Schmidt. After having read a copy of Dr. Van Woert's paper I was sorry I had consented to open the discussion, as I have really nothing to criticise. The technique of the whole procedure, as given to you by Dr. Van Woert, was thoroughly explained to me at the time when he adopted it. I have followed it out since that time with the utmost comfort and satisfaction to myself and my patients. When an impression goes downstairs now I expect that the inlay returned will fit that cavity, because I know now how to take accurate impressions. This method, as explained by Dr. Van Woert, should appeal to every one of you; and if you try it you will be convinced that it is a grand good thing. I have a show-piece which Dr. Van Woert requested me to bring here. It was made in my laboratory, and has fifteen cast inlays. I will pass it around.

If every point is carried out as Dr. Van Woert has described there will be no trouble. In the mixing of amalgam, have it soft enough so that if you drop it on the bench it will spatter. Press it into place into the impression with spunk.

As to the kind of amalgam, I am not acquainted with the kind the doctor spoke of. I have used the S. S. White True Dentalloy because of its cheapness. It sells at $1.50 per ounce, and bought in $10 lots, with the cash discount, it makes it quite an inexpensive material for models. Copper amalgam I tried, but found it broke under the swaging process. The point I want to bring up is this: When I adopted this method I was about discouraged. I had decided that I would have to give up the making of inlays as extensively as I wished, but I found part of the difficulty was obviated by Dr. Van Woert's method. No doubt the method of making matrices discouraged many, and yet the public demand porcelain inlays, or something similar, and there have been a large number taking up silicate cements. To put in a good silicate cement, which will hold its color and not discolor or damage the tooth, requires almost as much time in my hands as a porcelain inlay. Why not then make the porcelain inlay, and then you have a cemented porcelain, and not a cemented silicate?

I wanted to know what proportion of the men had taken up the silicate cements, and I called up Mr. Lochhead, who is a sales agent of Klewe & Co., and who also runs a laboratory. He has written me as follows:

NEW YORK, March 8, 1909.

Dear Doctor Schmidt:

My business, both here and at Boston, would indicate that the use of porcelain is again coming into vogue. However, the general satisfaction in our porcelain results, ninety-five per cent. of which are obtained by the impression method, may have some bearing or influence on my estimate of the desire on the part of the profession to return to porcelain.

True, the sale of porcelain materials has fallen off greatly. A conservative estimate in this falling off would probably be about eighty per cent. Dentists all over the country several years ago were loaded with practically all kinds, and it is a safe presumption that in every dentist's "morgue" will be found unused porcelain outfits, furnaces, Archite cement, etc.

In my own experience in demonstrating, could I have possessed the knowledge, skill and faculty for imparting a correct understanding of the simple and effective method which I now follow, the rapid and accurate handling of porcelains, I firmly believe many more dentists would be employing porcelain in daily practice. The fact is, we demonstrators were of necessity forced to obtain sales in order to continue. We had to make

our clinics interesting, and the skilled demonstrator's work invariably looks easy to the audience.

In consequence, many dentists thought that equipment alone was necessary to give his patients porcelain results that would reflect credit on his practice, and that thereby he would maintain his position in his profession.

I will state a few facts regarding the laboratory. I have over six hundred porcelain filling accounts on my ledger; seventy-five per cent. of these are active. Most of the balance send in work occasionally.

Two-years' experience shows the completion of fourteen thousand inlays, twenty-five hundred of these being gold.

I have customers in fourteen States, and every day have inquiries either by mail, telephone or in person.

The biggest drawback, or the most serious one, is an imperfect impression, and, in consequence, I am obliged to school beginners in this important part of the process. Once they understand it, we often run twenty-five fillings for a dentist without a make-over. My method is so accurate that my filling *invariably* fits the special copper amalgam model, and I have few make-overs in consequence of imperfect fitting of the model.

The demand for the work is phenomenal, and at Boston (two-months' experience) eighty dentists are sending in work.

I want to add that in my belief, from my experience in teaching porcelain (direct matrix method) in every State in the Union, Canada, Mexico and British Columbia, and meeting the very cream of the profession, that the great discouraging feature of porcelain work was *the matrix*. It has driven thousands of dentists to discard the work entirely. I do not want to say anything about what I have to sell, but everything I use in my system I make myself, or have it made as I want it. Impression material, special copper amalgam, platinum, 1-3000 inch, two brushes, one carver, one Ballend pliers, one model burnisher.

This is *all* the worker of this system needs excepting his furnace and porcelains. JAS. D. LOCHHEAD.

Mr. Lochhead tells me that his work is not entirely with the first or second-class dentist, but also with the third or fourth-class dentist. The people have heard of this kind of work, and they want it. We have had patients coming to us, asking for porcelain fillings, but they say: "Doctor, I understand they do not stay in." The great trouble has been improper cavity preparation, and the trouble in making the matrix.

Mr. Lochhead told me over the telephone of a quick method he has of casting gold inlays. He covers his wax filling with the usual investment and then the balance of the investment is made of three parts plaster and one part fine ground bird sand. With this method of investment we have been able to cast in twenty minutes.

As to the copper amalgam mold, I did not find it a success. This man claims he has one that is successful, and it will be placed on the

market for five dollars per ounce. This letter was of great interest to me, and I though it would interest the members to hear it. He informs me that they have an alloy for casting which will not tarnish. It is German silver, and will be good for those who can not afford gold.

Dr. J. B. Ruyl.

First of all, I would like to thank the essayist for the simple way in which he has made himself understood in this paper, and for the practical technique which he has shown on this and many other occasions. It is a method which I have followed for some time—in fact, I learned it from Dr. Van Woert; but I do not believe that in every case you can use the impression method in justice to the patient. For instance, what would he do in the anterior teeth where we have very small pinhead cavities? In a case of that kind it would be almost necessary to cut away a large portion of the tooth to gain access either labially or lingually, or get an unduly large separation, which would not be necessary with the direct method. A case came to me this morning, where there were two cavities in the lower bicuspid, one distal approximal, and one mesial approximal. In the distal I placed a porcelain, and for the other I took an impression for a gold inlay. I used the direct method and sent it to the laboratory to be baked, and went on with the direct method for the gold inlay, and when I was through with that, I prepared cavities for two other fillings, and by that time the porcelain filling was ready to be inserted in the tooth. In that way we saved a great deal of time.

In reference to gold inlays I find the direct method the best. The doctor spoke of using the wax of the same temperature throughout, and forcing it into the tooth, and not getting a perfect adaptation. I find by using it hot on the end, and a little cooler on the back, forcing it into the cavity and trimming the surplus, you can carve it to the edges and then with the hot burnisher get that feather-edge which can be finished off later, which I often do.

There is a certain amount of shrinkage in the amalgam, and, after making up your casting, you will find your margin is a little shy, especially at the cervical border. The filling is put into place and after the cotton roll is taken out we are apt to forget about it, and that filling will come back in due time with a leak.

I find the direct method the best, most simple and most satisfactory, especially when I can use my disk and see the little overhang fly off; take a sharp excavator and run over the tooth, and you hardly know when you are passing from tooth to filling.

About gold-foil: The essayist said the cemented filling has come to stay, especially to supplant the gold filling. I do not agree with him, and I will ask him a question. What would he do with the very small fissure

cavities in the bicuspids, or the minute cavities on the buccal surfaces, or the fissure cavities on the surfaces of molars, where we formerly took ten minutes to put in a small foil filling? I think the foil filling there is better than any cemented filling.

I agree with the doctor thoroughly in regard to the cemented filling. I think it has come to stay; but I think the porcelain filling has its place, and that the gold inlays have theirs, and the gold-foil and amalgam fillings have theirs. It will take good judgment to know when and where to put them.

Dr. Ottolengui. I will make a little epigram: Dr. Van Woert said he believed the cemented filling has "come to stay." I think we can say something better than that—I think it is going to stay. That is more true of the gold inlay than of the porcelain, because you can make the gold inlay fit better than the porcelain. There is a bicuspid being passed around—or a replica of it—and an inlay. Dr. Van Woert says that is defective—it is a discard in Dr. Van Woert's office. If that is a discard, I think it is easily understood why so many people are being satisfied with all sorts of cheap-John machines and methods for making gold inlays. I think there are many gold inlays no better than that, that are being considered very satisfactory. I think that is a lesson of standards; unfortunately, the standards of different men vary, and what is very satisfactory to one man is discarded in another man's office, and there I offer my compliments to Dr. Van Woert—he is not satisfied with anything short of perfection.

I have not been a disciple of the impression method, but that is because I think every man should know his own limitations, and I have not been successful with it. I can not, on the other hand, agree with Dr. Ruyl, who thinks the direct method is a time-saver. I have taken the trouble lately to time some of my operations, and I am quite satisfied that with some difficult, complicated, direct wax inlays that I have made—I have expended more of my own time than was warranted—because of the difficulty of getting a wax inlay perfect along all its margins, especially at the cervical margin, perfect in contour and finish, so as to have as little finishing after the inlay as possible. I believe I have expended more time of my own than was warranted in those cases, when there is a way of doing it largely with the time of an assistant, and getting as perfect, if not more perfect, results, and, therefore, I am more than eager to acquire the skill Dr. Van Woert has demonstrated.

I believe the future practice will be a combination of both methods. I know there are many cases where I can make the wax inlay and have the gold inlay finished before Dr. Van Woert, with his assistant, can have

his amalgam model made. On the other hand, I am quite satisfied, as I have admitted, that the impression method will be a more accurate method in a great many complicated cases. So both methods will be essential, and most esential of all, will be a skilful application of them.

Dr. Dies. I have been deeply interested in the paper of Dr. Van Woert, and have been particularly impressed by those very excellent amalgam models. I had listened in times past to Dr. Van Woert advocating the amalgam model, but it never seemed to make the impression upon me it should have done. For many years I have used oxyphosphate of cement for taking impressions, usually vaselining my cavity; and instead of amalgam I have used Melotte's metal, taking care always to press it down into the oxyphosphate mold, just as it was about to set. After viewing my results, and the results of Dr. Van Woert, I think that, perhaps, his amalgam model is sharper and better than the Melotte metal. I believe and know that the impression method, in combination with Dr. Price's stone model, is the only way of making extensive bridges by the Taggart cast method. I have found with the ordinary investments that the shrinkage was so great between my piers—that is, between my two cast-gold inlays on which I anchored my bridge—that it was well night useless, and in many cases I had to force my teeth together, so to speak, to get my inlays in. Dr. Price advocates the impression method in combination with his stone models, and I repeat that in bridgework I think that will be the best method.

There is no doubt that the impression method of making inlays is practical and good. The only objection I have to it is the fact that it consumes more time than other methods.

Dr. Houghton. There are one or two little items in the paper that Dr. Van Woert did not touch on, which, I think, are pertinent. I did not notice anything in his paper about occlusion. Is that all guess work on his part? When we use the direct method by making a wax inlay first, and the patient bites on it, and we carve it and remove it and reproduce it, we have the occlusion, and the contour. I have done most of my work by the direct method; the wax can be removed if you are careful in carving in the interdental spaces. That has been to me the most successful way. I have not done a great deal of cast-gold inlay work, I must admit; I have done most of my castings, in prosthetic work, crown work and dummies. I did not hear whether the doctor used 20, or 22, or 24 k. gold. I suppose he used 24 k. pure gold. I know all about his porcelain work, and have admired if for years. There is no man in the country that does better porcelain

work than Dr. Van Woert, in my opinion, and I admire him for it. But will some one tell me the difference in a twelfth-year molar, between a cemented amalgam filling and a cemented gold filling? The difference is about twenty dollars. (Laughter.) That is all I can see.

Dr. Ottolengui. I could not answer Dr. Van Woert's paper—there was nothing to answer; but other men have talked and have suggested things. What Dr. Houghton said is only a joke. I will tell you the difference in a minute between a cemented amalgam and a cemented gold filling. He spoke of the morsal surfaces of a molar, I presume. A properly inserted gold inlay, in the morsal surface of a molar, will not expose any cement at all even with the magnifying glass.

Dr. Houghton. Neither will amalgam.

Dr. Ottolengui. Suppose it does not—the amalgam is a friable substance which *will* expose it in a short time; but with gold it is quite different. During the setting of the cement the edges can be finished with a stone first and then burnished, so that it is impossible to detect it from a gold-foil filling, and, under stress of mastication, it will prove durable. Try this with a cemented amalgam filling, and the edges will not remain perfect for any great time.

Dr. Houghton. I was called to account in regard to a cemented amalgam filling. Dr. Ottolengui stated that inside of a short time the cement would show in an amalgam filling, and not in a gold filling. If that is the case, he does not know how to insert a cemented amalgam filling. I have put in thousands of them, and to-day they are accomplishing more good than anything I do in saving teeth for my patients at a small price. If you have millionaires who are able to pay any price, all right; but for those who love their fellow-men, and want to do the best they can, these cemented amalgam fillings are the greatest God-send we ever had. (Applause.)

No cement line will ever show along the edges, if you are careful. When the cement begins to harden, you trim off the edges. These edges do not crack off later. I use the same high grade alloy as Dr. Schmidt and Dr. Van Woert. I make it myself, and I know what I get. They know what they get. I say no cement line ever shows.

Dr. Ottolengui. This question of the price that a patient pays has no place in an argument as to whether a thing is good or not. That may be a very splendid method, and it is a method I have practiced, not necessarily for poor people either. It is not a question of whether a person is poor or rich, but whether it is

good or bad. I only discussed one particular phase of the cement-lined amalgam filling, and that is on morsal surfaces. That is where the chief stress of mastication must come. I will not dispute Dr. Houghton's individual experience, but if it is his experience that the edges of amalgam fillings—cement-lined or not—remain as perfect as gold inlays, in morsal surfaces, he has had an exceptional record. I will venture to say you can not go among men who extract teeth, and collect one thousand teeth that have had amalgam fillings in them and find one per cent. with good edges.

Dr. Van Woert. Dr. Ruyl brought up the point, as I understood it, of the shrinkage of the cast-gold filling—that is, if the filling is made from an amalgam model it would be smaller than the cavity from which it was prepared.

Dr. Ruyl. Perhaps I did not make myself clear. I meant there is shrinkage in the amalgam, and when the wax filling is made up from that, and then a casting made, and you put it into a tooth, you would find a shrinkage of the gold which was due to the shrinkage of the amalgam.

Dr. Van Woert. About twenty years ago Professor Flagg, then one of our leading men, said at a meeting of the New Jersey State Dental Society, that the shrinkage of amalgam was .0001 of an inch to the inch. If that be the case, the amount of shrinkage in one of the amalgam models made for so small a filling as that required for a tooth, is very minute. On the other hand, the investment for which the casting is made, shrinks in the heating up, and almost invariably the gold casting will not go in without a considerable effort, showing it is larger than the model.

The accuracy of this method was demonstrated to-day at my office, and the president, Dr. Hillyer, saw it. I prepared a cavity and made the model this morning, and set the inlay this afternoon in my son's mouth. It went into the cavity of the tooth as perfectly, I think, as it is possible to make one by the direct method; and as for the margins at the cervix, I will leave it for those gentlemen who were present to say.

I do not believe there is a man present who has seen Dr. Taggart manipulating wax and make castings that does not admire it, and recognize that he is an artist; but there are few Dr. Taggarts. I am reminded of an incident that happened some years ago. I think the man lived in New Jersey. They were troubled a great deal in certain sections with counterfeit bills of large denominations. When it was sifted down it was found that the man who had made them had done every bit of the

work with a pen. Is that any reason why the Government should employ him to make money for us? There are very few men in this room that could begin to do what Dr. Taggart does. I must do the best I can to give my patients the best results.

The question of the small fillings is another consideration. Dr. Ruyl spoke of it, and asked me if I would use amalgam there. I would extend such a cavity on the theory of extension for prevention. You have an entirely different proposition before you than when you place a gold-foil filling into a tooth. Take the small surfaces of the lower molars, for instance, where in years gone by we would put a little gold filling in the fissure. I do not insert any of those pinhead fillings nowadays. When I say pinhead fillings, I do not mean I sacrifice tooth structure needlessly, particularly in the six anterior teeth; but I will venture to say I can take an impression of any cavity that Dr. Ruyl can make a matrix for. If he can remove a perfect matrix, I can take the impression.

I have the same admiration for Dr. Ruyl that I have for Dr. Taggart, and I want to tell you he is an artist, and when he says this direct method is better, he sees it from his standpoint; and he forgets we are not all artists as he is. My object is to get at the most practical way of making cemented fillings, whether of gold or porcelain, and getting an approximately accurate result.

Dr. Houghton regrets that I did not speak of the occlusion. I did not go into the construction of gold and porcelain fillings in general; I was talking of the impression method more particularly. I did say in the paper, however, that the wax filling is put into the tooth and the patient allowed to bite upon it for occlusion.

Dr. Houghton spoke of the gold I use. There has been a great deal of discussion of that. Dr. Taggart has recommended the use of pure gold exclusively as you all know, from his writings; but I have found that a pure gold casting, while it is harder than a gold-foil filling—I do not know that I should even say that—is of a different consistency. There is a stiffness, and the structure is so different that it will stand up better, but it has not the body back of it that alloyed gold has. I have tried everything that I could hear or think of, and I used for a long time, and use a great deal now, Nies' 22 k. non-oxidizable gold and I can see very little difference in the casting qualities. I have used an alloy of seven per cent. platinum, furnished by Dr. Rhein, which he made, and I like that very much. There is a question in my mind as to just what proportion of alloy will be the best and it will be some time before we decide that; but up to the present time I believe that for large restorations I

have yet to find anything to equal Nies' 22 k. non-oxidizable gold. I think the pure gold is better for small fissures.

I have absolutely no object, as you all know, in taking the stand I do for the impression method, other than that of the interest of all. I am only giving you my experience which is extensive, because I have traveled considerably to see experts at work in their own offices, and I have experimented, perhaps, more than any man in the room; and I have yet to find anything to take its place. I believe the time can be minimized better with the impression method than with the direct.

EDITORIAL

The Proposed Amendments to the Constitution of the National Dental Association.

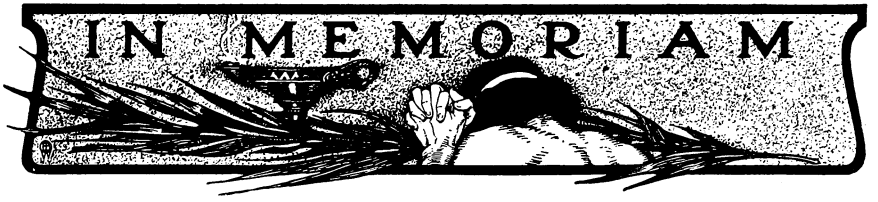
The pamphlet sent out to the members of the National Dental Association is the report of the committee appointed after the Boston meeting to revise the constitution. Nothing is said of the full and completely new constitution which was presented at Boston, and referred to this committee. This is the more noticeable, since fully ten per cent. of the members took the trouble to write letters to ITEMS OF INTEREST commendatory of the proposed new constitution. We do observe, however, that the committee has at least adopted one term, which was the essential feature of the constitution referred to them; this is "House of Delegates."

But the "House of Delegates," suggested in the committee's amended constitution, is as much like the House of Delegates of the American Medical Association as a pineapple is like a wooden nutmeg. The House of Delegates of the American Medical Association is—well, it is a House of Delegates. Every member thereof is a delegate, and the entire delegation, or House of Delegates, is a *pro rata* representation from the constituent members, the State societies.

The "House of Delegates," proposed by the committee, is the same old "Executive Council" in a new dress, and slightly enlarged. The new name, "House of Delegates," as much disguises the old "Executive Council" as pasting a false moustache on a seventeen-year-old girl serves to cause beholders to imagine she is a man. One wanders why, if the committee does not think that the time is ripe for a House of Delegates, that it should retain the old Executive Council, and yet change its name? For surely nothing else is altered. The new body, call it what you will, has the same old ambiguous powers granted to it in the same old ungrammatical paragraph. True there are to be more of them, but their method of appointment is even worse than heretofore.

In the past we have had a council comprising two members from each geographical division, the president being one of the two in his division, and the secretary making a seventh member. These were commonly elected in the good old ring-rule method of having "the secretary cast one ballot," etc., etc. At least every member had the constitutional right to prevent this by objecting, though no one ever did, probably because no one ever cared enough. The substitute for the council, the so-called "House of Delegates," is to be composed of five from each geographical division, and these are to be chosen by a caucus of those present from each division. Could anything be more entertaining? Here we have a strictly political method openly adopted for use by a body claiming to be professional men and seekers after scientific knowledge. But it is not the method more than the result of such election that is open to criticism. The five, selected by the caucus of members residing in the division where the meeting is held, might be fairly representative. But those chosen by the other two caucuses would be anything but delegates, or even representatives. They would simply be the choice of the professional politicians present.

This brief comment is merely intended to attract attention to the committee's proposed amended constitution. A critical review of it will be presented later.



Dr. A. W. Harlan.

WHEREAS, Dr. Allison Wright Harlan departed this life on Saturday, March 6, 1909, in the city of New York: Dr. Harlan became a member of the Chicago Dental Society in 1869, when he entered upon the practice of dentistry in Chicago. He attended the Ohio College of Dental Surgery, and graduated from that institution in 1880. Subsequently, he graduated from the College of Physicians and Surgeons in Chicago. He received the degree of Master of Arts from Darmouth College. He was deeply interested in all that pertained to the advancement of his profession. He was well known in dental literature as the founder and editor of the *Dental Review,* and always interested in dental educational work. He assisted in founding the Chicago College of Dental Surgery, and was its professor of materia medica and therapeutics from 1883 to 1904. He held a professorship in the College of Physicians and Surgeons in Chicago. He was one of the most enthusiastic workers in the Legislature in the passing of a bill which became a law in 1881, and was on the floor of the House at the time is was passed. He was a member of the first Board of Dental Examiners.

It was Dr. Harlan who first proposed the holding of the International Columbian Exposition in an article which he wrote twelve years prior to its realization, and in this article he also proposed the holding of the Second International Dental Congress. Dr. Harlan was the secretary-general of this Congress. He was one of the organizers and original members of the International Dental Federation, and he was also a delegate to the Medical Congress held in Madrid in 1903.

Dr. Harlan was a prolific writer, a careful and conscientious teacher, and his interest in the society work of the dental profession was perennially active. His writings related to questions of pathology, materia medica and therapeutics. Dr. Harlan's papers were characterized by careful investigation and thorough familiarity with the literature of the subjects upon which he wrote. He was always willing to contribute to the work of any society the best of his knowledge. Dr. Harlan attended

every meeting of the International Dental Federation from the time it was founded in 1900 up until last year. He was a member of the American Dental Society of Europe, and the city and State societies of nearly every State in the Union.

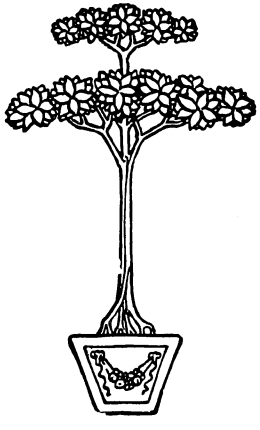
Be it therefore

Resolved, That in the death of Dr. Allison Wright Harlan the dental profession has lost one of its most able members.

Resolved, That the Chicago Odontographic Society will ever remember with gratitude his devotion to its advancement to a high place among the professional organizations of our country.

Resolved, That a copy of the resolutions be spread upon the minutes of the meeting of this society and sent to the different dental journals for publication.

TRUMAN W. BROPHY,
C. N. JOHNSON,
E. NOYES.



SOCIETY ANNOUNCEMENTS

National Society Meetings.

American Society of Orthodontists, Cleveland, Ohio, October 4, 5, 6, 1909.

State Society Meetings.

Ohio State Dental Society, Columbus, O., December 7, 8, 9, 1909.

West Virginia State Dental Society, Wheeling, W. Va., October 13, 14, 15, 1909.

American Society of Orthodontists.

The ninth annual meeting of the American Society of Orthodontists will be held in Cleveland, Ohio, on Monday, Tuesday and Wednesday, October 4, 5 and 6, 1909.

FREDERICK C. KEMPLE, Secretary.
43 West 48th Street, New York City.

Daviess County Dental Society.

The dentists of Owensboro, Ky., have organized the Daviess County Dental Society. The object of the organization will be to promote social intercourse, good feeling and the mutual improvement in modern dentistry in all its phases, that the public interests may be best served.

The beginning is certainly most favorable, as we have almost the entire number of resident dentists of the city as members, and already

there is an era of good feeling never known before. It is very probable that the local society will become a part of the State Association.

The following officers have been elected: President, W. B. Armendt; vice-president, R. E. Morrison; secretary and treasurer, Gordon L. Burke.

Harvard Dental Alumni Association.

At the thirty-eighth annual meeting of the Harvard Dental Alumni Association, held in Boston, Mass., June 28, 1909, the following officers were elected for the ensuing year, viz.: President, Henry A. Kelley, '88, Portland, Maine. Secretary, Waldo E. Boardman, '86, Boston, Mass. Treasurer, Harold D'W. Cross, '96, Boston, Mass.

Executive Committee—Waldo E. Boardman, '86, chairman ex-officio, Boston, Mass.; Charles E. Parkhurst, '97, term expires June, 1910, Somerville Mass.; Arthur H. Stoddard, '87, term expires June, 1911, Boston, Mass.

The above-named officers constitute the Council.

Trustees of Life Membership Fund—Harold D'W. Cross, '96, treasurer ex-officio, Boston, Mass.; Frank T. Taylor, '90, term expires 1911, Boston, Mass.; Charles P. Briggs, '89, term expires 1912, Boston, Mass.

Committee on Nomination and Election of Officers—Amos I. Hadley, '91, Boston, Mass.; Eugene B. Wyman, '04, Cambridge, Mass.; Robert T. Moffatt, '95, Boston, Mass.

WALDO E. BOARDMAN, '86, Secretary.